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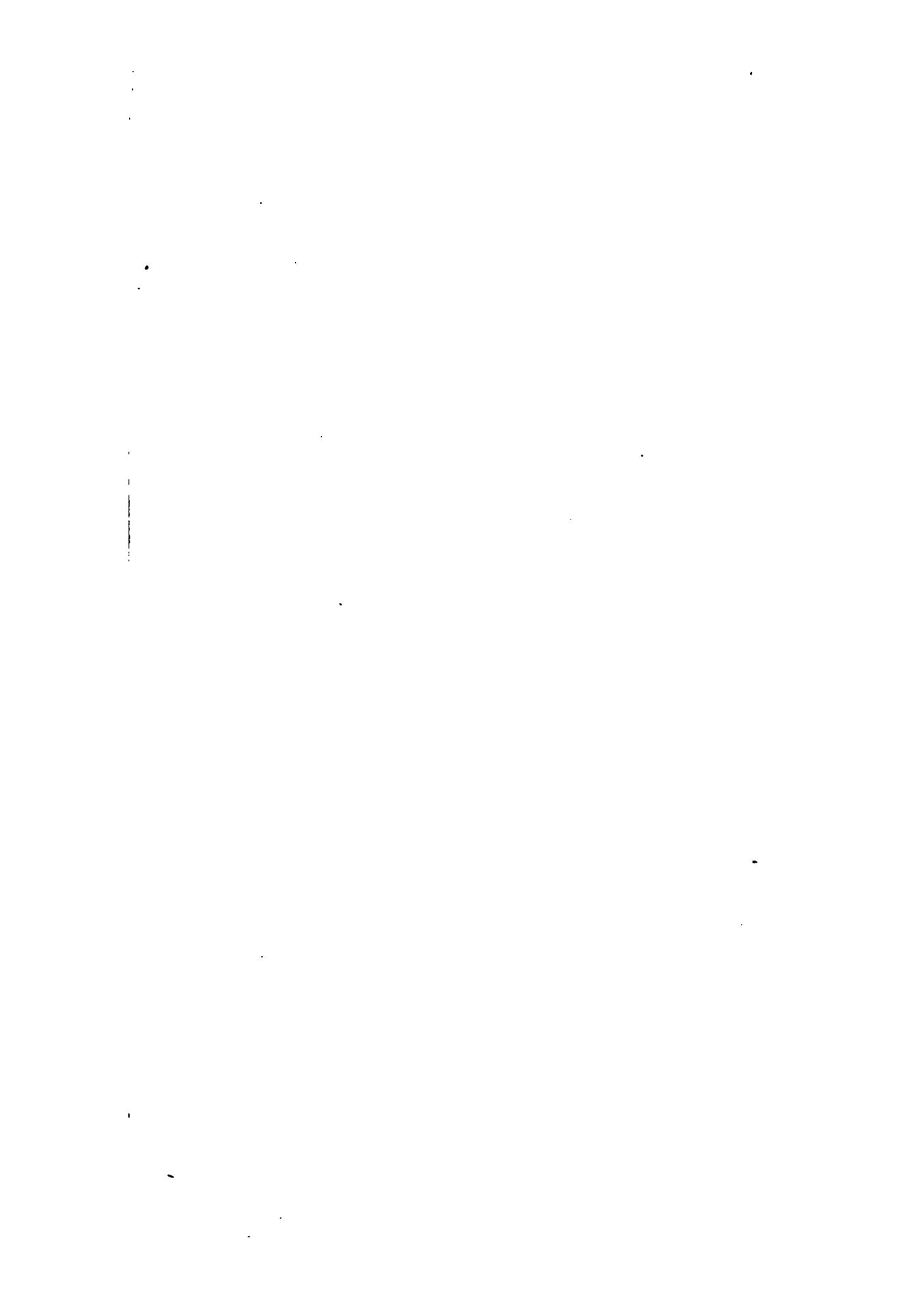
PRESENTED

BY

Benjamin Robman, M.D.







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A PRACTICAL TREATISE

ON

NASAL CATARRH

AND ALLIED DISEASES

THE PROPERTY

OF THE
N.YORK HOSPITAL

BY

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In Memoriam.

J. FORSYTH MEIGS, M.D.,

ONE OF THE PHYSICIANS TO THE PENNSYLVANIA HOSPITAL; CONSULTING PHYSICIAN TO THE
CHILDREN'S HOSPITAL; MEMBER OF THE AMERICAN PHILOSOPHICAL SOCIETY, OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, ETC., ETC.,
WHOSE LIFE SERVICE IN THE CAUSE OF PROFESSIONAL DUTY WON THE ADMIRATION OF
ALL WHO KNEW HIM. THIS LITTLE WORK IS REVERENTLY INSCRIBED.

The good man and conscientious worker to whom this book was dedicated, when it first appeared, is now dead. In its enlarged form, it asks no higher honor than to be offered as a posthumous tribute to one who shall ever remain to the author a model of what the true physician and friend should be.



PREFACE TO THE SECOND EDITION.

To render my treatise more worthy of the favor of my professional brethren, I have added five chapters to the work as it first appeared. These are devoted to the study of—

1. Aural Complications of Catarrhal Inflammations of the Nose.
2. Deflections of the Nasal Septum and Bony Obstructions of the Nasal Passages.
3. Ulcerous Coryza.
4. Adenoid Vegetations at the Vault of the Pharynx.
5. Mucous Nasal Polypi.

I have, also, carefully revised the text of the previous edition, and made, where required, changes or additions. Numerous additional wood-cuts have also been inserted.

Inasmuch as the diseases referred to in this preface often exist concomitantly with a catarrhal condition of the nasal mucous membrane, and, when they are present, render the treatment different and more difficult, at least in the beginning, the appended matter will make, I trust, my work more complete and satisfactory than heretofore.

It affords me great pleasure to acknowledge my indebtedness to my friends, Professor D. B. St. John Roosa, for several suggestions in the chapter on Aural Complications ; and Dr. Wesley M. Carpenter, for many useful corrections of proof while the following pages were going through the press.

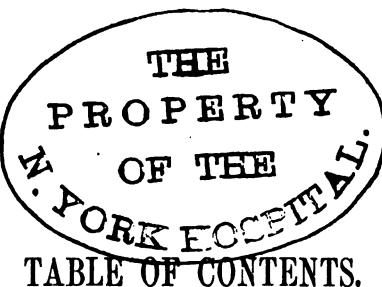


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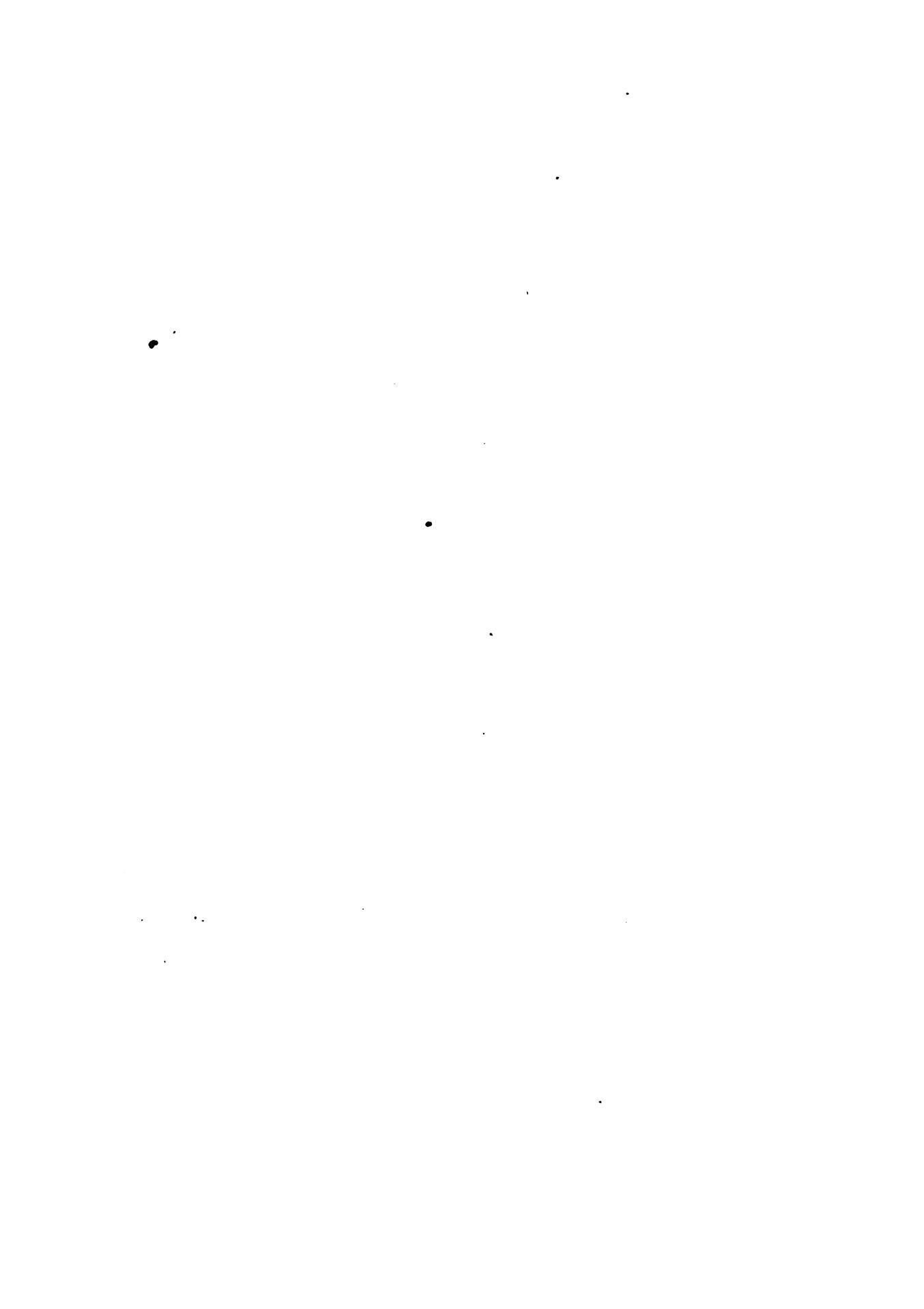
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ERRATUM.

Page 8, Section I. A.—4, for "bones" read "bodies."



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A TREATISE
ON
NASAL CATARRH.

PART I.

INTRODUCTORY CHAPTER.

MUCOUS and purulent discharges from the nose are frequently met with in the daily rounds of the general practitioner, as well as in the more exclusive work of the specialist in rhinoscopy. To treat fully and exhaustively of all the different morbid conditions which may give rise to these discharges would be a work of compilation, perhaps, more than one of individual thought and experience. For, I can believe but few amongst the most favored have seen and treated more than one case, here and there, of suppuration of the frontal sinus, or rare tumor of the brain. I am, however, persuaded that it is in the power of every earnest worker to describe fully the symptoms and proper treatment of ordinary forms of disease; also to give clearly and sufficiently their points of differential diagnosis, and such is the task I have undertaken with respect to catarrhal inflammations of the nose.

I have frequently remarked, while conversing with members of my profession, that almost all discharges from the nose are attributed by them to "catarrh;" and, whilst they admit how difficult it is to effect a cure of similar cases, they do not readily accept the fact, that different pathological changes may occasion symptoms closely resembling one another. In this way much confusion takes place, faulty medication is adopted, and the

consequences of disease, aided with bad treatment, are often deplorable. It is my wish to give greater lucidity to this subject, to further what I am convinced are, in many instances, effectual means of treatment, to point out some erroneous though commonly received notions, and to lay stress upon facts which appear to be only badly understood.

CHAPTER II.

DIVISION OF THE SUBJECT.*

ALL discharges from the nose, whether of a mucous, muco-purulent, or purulent nature, are either *idiopathic*, viz., caused by some local affection of the nasal passages, or *symptomatic*, i.e., occasioned by some neighboring morbid condition.

The idiopathic and symptomatic mucous and muco-purulent discharges are fewer in point of number, and have less importance when their quality alone is considered, than the purulent discharges. By reason, however, of the number of individuals affected with one or other of the diseases giving rise to the former, and the great annoyance or distress they sometimes occasion, they should receive very careful study.

I. In the idiopathic mucous and muco-purulent discharges we have the following affections :

A.—1. Acute coryza.

2. Prodromic coryza (influenza, measles, etc.).
3. Chronic coryza.
4. Hypertrophy of the turbinated bones (hypertrophic rhinitis).
5. Follicular disease of the naso-pharyngeal space (post-nasal catarrh).
6. Mucous discharges caused by neuralgia of the fifth cranial nerve.
7. Mucous discharges caused by mucous polypi of the nasal fossæ.

B.—Amongst the symptomatic mucous and muco-purulent discharges are those caused by—

1. Inflammation and dropsy of the frontal sinus.
2. Inflammation of the maxillary sinus.
3. Adenoid vegetations of the vault of the pharynx.

II. In the division of purulent discharges we have :

A.—Amongst idiopathic—

1. Discharges due to certain forms of coryza (pseudo-membranous, ulcerous, etc.).
2. Glanders.
3. Eruptive fevers.

* From *Thèse de Paris*, No. 76, 1873, modified by the author.

4. Foreign bodies, calculi of the nasal fossæ.
5. Abscess of the septum.
6. Fracture of the bones of the nose.
7. Caries, necrosis of the nasal bones.
8. Tumors of the nasal fossæ.
9. Abscess of the nose.

B. Amongst symptomatic—

1. Abscess of the frontal sinus.
2. Foreign bodies in the frontal sinus.
3. Polypi in the frontal sinus.
4. Abscess of the maxillary sinus.
5. Caries and necrosis of the maxillary sinus.
6. Tumors of the maxillary sinus.
7. Abscess of the brain.
8. Abscess of the orbit.
9. Abscess of the floor of the fossæ.
10. Caries of the frontal bone.

The above division, at first, appears needlessly extensive, but if we consider it carefully we shall find that it is not redundant, but, on the contrary, decidedly clear and useful in order to appreciate properly the numerous affections of the nose. It aids, without question, our ability to make a rigidly exact differential diagnosis in a particular instance, and is a great help, therefore, to the thorough study of the diseases mentioned. Some of these affections are frequent, and we should become familiar with them on this account; others are not so frequent, but are graver in their consequences, and, for this reason, deserve special study. A third class are both rarely encountered and are followed by less serious results; these latter are relatively unimportant. It is my design to devote myself in the pathological portion of this book, Part I., to considerations relative to catarrhal affections of the nose; Part II., to allied disorders frequently met with as complications, either singly or together, when a patient is examined by an expert for a presumable condition of catarrhal nasal inflammation. These affections are most interesting and important,asmuch as nine-tenths of all discharges from the nasal cavities are occasioned by them, and they interfere notably, at times, with the functions of smell, hearing, speech, sight, and respiration.

CHAPTER III.

ANATOMY, PHYSIOLOGY, AND PATHOLOGY.

THE nose is the special organ of the olfactory sense. The pituitary membrane, through the special function of the first pair of cranial nerves, affords protection to the pulmonary mucous membrane by warning us of the presence of deleterious gases or dusts. In a similar manner it also lends itself to our appreciation of the qualities of sapid substances. It likewise warms and moistens the atmospheric air in its passage to the lungs. In health, therefore, the mucous membrane lining the nasal passages is a guard to preservation and a promoter of life's enjoyment. When it becomes affected with disease its sensibility is dulled, and its special attributes are diminished or abolished.

The nasal fossæ are two irregular cavities situated in the middle of the face, extending from the base of the cranium to the roof of the mouth, limited laterally by the orbits, maxillary sinuses, and the zygomatic fossæ, on each side, and reaching from the nostrils in front to the naso-pharyngeal space behind. Each fossa is separated from its fellow by the bony and cartilaginous septum. The openings and boundaries of the fossæ differ, of course, very greatly in the skeleton, and when covered, as they are during life, by their lining membrane. Under both conditions, however, it should be stated that they are narrower above than below, deeper in their middle portion, and communicate with four irregular sinuses of unequal dimensions, which are the frontal, sphenoidal, maxillary, and ethmoidal, and with four cavities, viz., the orbital, cranial, and the spheno-maxillary fossa. The roof of each cavity is concave and narrow, the long diameter extending in an antero-posterior direction. Upon its surface the openings of the sphenoidal sinuses are found. The floor is wider than the roof, flat, but with a slight concave configuration toward the sides. The inner wall is a thin, vertical partition, frequently inclined to the left. The outer wall is irregular and anfractuous (Fig. 1). It presents three long passages (meatuses), situated between the three turbinated bones, which are prominent in the fossæ in a horizontal direction. The upper meatus, the smallest of the three, is only seen in the posterior part of the fossæ; upon the walls of its cavity two foramina

are visible, one of which communicates with the posterior ethmoidal cells, whence comes much of the secretion in old cases of post-nasal catarrh. The middle meatus also has two orifices ; one leading into the frontal sinus by the infundibulum ; the other, which is the most important, opening into the antrum. The lower meatus is the largest and presents the inferior orifice of the nasal duct. This duct, in catarrhal disease, frequently becomes blocked up with inspissated mucus, owing to infiltration of the pituitary membrane, causing a sensation of dryness in the nostril of the side affected, and the tears accumulate in the lachrymal sac, or even flow over the lower eyelid and cheek.

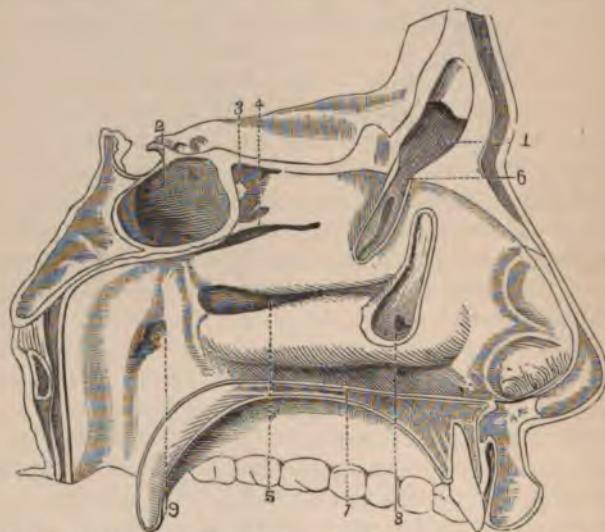


FIG. 1.—External Wall of the Nasal Fossa. 1, left frontal sinus; 2, sphenoidal sinus; 3, opening of the sphenoidal sinus; 4, upper meatus; 5, middle meatus; 6, communication of infundibulum with left frontal sinus; 7, lower meatus; 8, inferior orifice of nasal duct; 9, orifice of Eustachian tube.

Posteriorly, the nasal fossæ communicate by means of two oblong orifices with the pharyngeal vault. On either side of this space are found the openings of the Eustachian tubes, and above and behind, the fossæ of Rosenmüller, while upon the median line, and extending to some distance laterally, as well as downward, is seen the mass of glandular tissue to which the name of "pharyngeal tonsil" is given. This region below is limited by the free margin of the soft palate. Inasmuch as from a physiological and pathological point of view there are numerous close relations existing between the space described and the nasal chambers, properly speaking, one region cannot be wholly separated from the other.

The surface of the nasal mucous membrane is generally

smooth, except over the lower portion of the septum and the inferior turbinated bones, where the natural inequalities occasionally make one suspect, without other cause, the existence of a pathological condition. In the regions just mentioned, the membrane is thickest, leaving but a narrow space for the ingress and exit of air in normal respiration, and as this portion of the mucous lining is very vascular, owing to the presence of veins of large calibre, its tissue becomes rapidly turgescent, and a more or less complete stoppage is produced upon the slightest influence of cold. During ordinary, or even forced inspiration, the current of air which passes into the lung does not reach the upper region of the fossæ, where the branches of the olfactory nerve are distributed, and thus the sense of smell is greatly blunted, or completely abolished. As the nostrils and passages behind become more obstructed, the tendency to breathe through the mouth is pronounced, and the jaws are never completely closed at any moment; soon the desiccating effects of a relatively dry air upon the pharyngeal wall are experienced and a sensation of almost constant dryness of the throat is complained of. In this way we have a partial explanation of the glazed aspect of the posterior wall of the pharynx, which is so characteristic of *pharyngitis sicca*. This condition, therefore, frequently indicates nasal obstruction and is accompanied by fetid breath.

Dr. Harrison Allen * has found as the result of observation of crania that a difference in the diameters of the posterior nares can be detected. In the living subject, and in a fixed proportion of cases, nasal obstruction may be limited to one of the nasal chambers, and may be due to congenital causes. This asymmetry exists without accompanying septal deflection, and it is, therefore, evident that the obstruction resulting from it cannot be relieved by any operation upon this partition, as at present defined.

The reticular structure of the layer of tissue between the mucous membrane over the inferior turbinated bones and the periosteum was referred to nearly thirty years ago by Kohlrausch.† Since that time it has also been described by Kölliker.‡ It remained, however, for Dr. Bigelow § to give a more accurate and detailed account of this structure, and to point out that practical application may be readily made from a knowledge of this anatomy. In the accompanying figures (Figs. 2 and 3) a very clear idea is afforded of this histological condition, as

* Archives of Laryngology, vol. iv., No. 4, p. 256. † Müller's Archives, 1853, p. 149.

‡ Handbuch der Gewebelehre des Menschen, p. 741. Leipzig, 1867.

§ Boston Medical and Surgical Journal, April 25, 1875.

shown by sections seen under low, or relatively high magnifying powers of the microscope.

Our author likens it very aptly to that of the penis in man, or the labia in woman. Under the influence of all sorts of local irritants, reflex or emotional disturbances, these "corpora cavernosa" * are readily distensible. They become turgid in a moment, and again as quickly collapse. In the treatment of

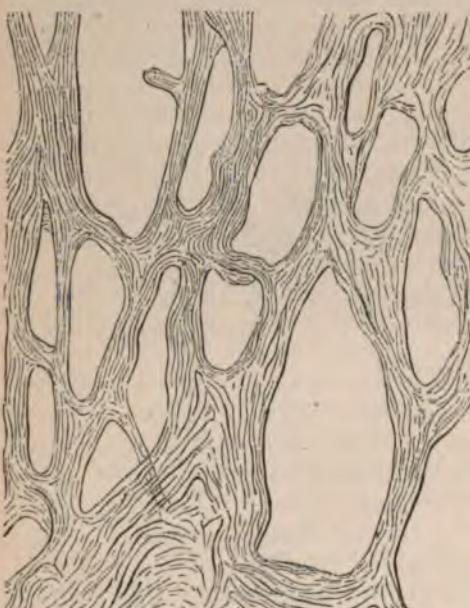


FIG. 2.—Section of Posterior Extremity of a Turbinated Corpus Cavernosum, Hardened in Alcohol, Treated with Iodine and Glycerine, and Magnified Ninety Diameters, showing Cavities, Walls, and Trabeculae (after Bigelow).



FIG. 3.—Sections of Turbinated Corpora Cavernosa, Inflated, Dried, and Magnified Two Diameters (after Bigelow).

acute catarrhal inflammations of the nose, many astringents will produce these effects, the one being followed by the other after a brief lapse of time. These results are not nearly so obvious or considerable on any special occasion when the catarrhal inflammation is already chronic and accompanied by considerable plastic exudation. When, in the acute or subacute inflammations of the nose, after local treatment, the turgescence

* Name given to the tissue covering the inferior turbinated bones by Dr. Bigelow.

has, in part, subsided, this change is accompanied by an abundant flow of serum which exudes from the vessels of the mucous membrane, and resembles very much the initial stage of an acute coryza due merely to atmospheric causes.

The soft pulpy structure of the nucleated cells which cover the olfactory membrane is peculiarly adapted to the special function of this part ; below, a columnar epithelium, provided with cilia, is found, as being perfectly suited to a less sensitive need. In the annexed figure (Fig. 4) is clearly shown the direction taken by the fine terminal fibres of the olfactory nerve between the epithelial cells, to the surface of the mucous membrane. To measure accurately the flavor of different substances it is essential that the first-named epithelium be in good condition and capable of receiving directly the odoriferous properties of different substances. If, during the act of swallowing, the **aroma** or smell even of aromatic kinds of food, or **wines** of rich bouquet, does not penetrate the nasal **surfaces**, a great part of the effects and consequent **pleasure** is completely lost. The same result is accomplished by compressing the nares during the act of deglutition, for in this way the sense of smell is suspended in great measure, and the ordinary flavor of many kinds of solid food, such as freshly cooked **meats**, etc., becomes almost imperceptible. A very similar effect, as already remarked, is, at times, produced by an acute or chronic catarrhal inflammation of the nasal passages, which suspends more or less completely the sensibility of the olfactory membrane.* The condition of the nasal cavity has an undoubted effect upon the voice and articulate speech.† In its normal state it is separated only by a thin partition from the oral cavity, and communicates freely anteriorly with the outer air. The air contained within it vibrates in unison with the air in the pharynx below, and while filling a resonant chamber it adds character and volume to the sound. In the articulation of most sounds the nasal cavity is closed posteriorly by the soft palate ; but in pronouncing *m* and *n* it is open throughout, and is a simple outlet for the passage of the air toward the exterior. In the event of complete stenosis of the posterior orifices by the presence of tumors, enlarged turbinate bodies, or cicatricial adhesions, there is not much interference with the sounds of the voice, other than the inability of the pa-



FIG. 4.—Terminal Fibres of the Olfactory Nerve.

* Dalton : Human Physiology, p. 602. Philadelphia, 1875.

† Archives of Laryngology, vol. iii., p. 24.

tient to pronounce *m* and *n*. If, as in a case of Seiler's, there is a small opening through the cicatricial adhesion of the soft palate to the pharynx, the voice becomes almost unintelligible. If there exists complete stenosis of the anterior nares, the voice becomes almost inaudible to another person, as the vibrations of the air in the nasal cavity cannot come out and reach the ear of the listener, being intensified. To the speaker himself, by reason of conduction through the bone of the skull, they are carried to his ears with great force. An individual thus affected will pronounce *b* for *m*, and *d* for *n*. The change in the character of the voice is in direct relation with the amount of obstruction in the anterior nares: but even when this is relatively slight, the voice will be somewhat modified, and the individual is said, erroneously, to speak through his nose.

Repeated inflammations of the pituitary membrane lead too frequently, by propagation, to diseases which at first do not appear to have close relationship with them. Amongst the most important of these are chronic affections of the middle ear, the laryngeal sac, and the maxillary, frontal, and sphenoidal sinuses.

The pituitary membrane is rich in acinous glands, which, normally, exude a small amount of mucous secretion, thus moistening the surface. According to Cohen,* this moisture is more probably due to the deposit of water from the expired breath. Be that as it may, it is certainly true that whenever the pituitary membrane becomes unusually dry, the immediate result of this condition is an uncomfortable sensation in the nose. This feeling may indicate either a beginning inflammatory state, or the fact that the exterior atmosphere is loaded with dust or other impurities.

Extreme vascularity of the pituitary membrane explains the unusual frequency of epistaxes, which occur in catarrhal inflammations of the nose, and the special venous distribution over the inferior turbinated bones accounts clearly for the march of ordinary coryza.

The nerves of the pituitary membrane are of two orders: 1. A nerve of special function, the olfactory. The terminal filaments of this nerve do not extend beyond the middle meatus, or the middle turbinated bone, giving a particular character to the superior portion of the pituitary membrane, which, in this part, is called olfactory. 2. Nerves of general function, which come from the fifth pair of cranial nerves and the sympathetic. These afford positive assurance of even the slightest sensations of pain or discomfort, to all of which the olfactory filaments remain absolutely indifferent.

* Diseases of the Throat, First Edition.

The precise mode of termination of these latter is now determined, and they are known to send numerous hair-like filaments to the pituitary membrane covering, the superior and middle turbinated bones, and the upper third of the septum. What we also know is, that the impression of a pungent odor, when once received, will remain sometimes for a long period without disappearing, although in order to be perceived it is



FIG. 5.—Nerves of the Outer Wall of the Nasal Cavity (Hirschfeld).

essential to have the nasal passages completely pervious to air. A catarrhal condition of the nose, which has propagated itself to the ears, eyes, throat, and lungs, is more frequently met with than a reverse progression of morbid processes. If the breath becomes offensive in respiration through the nose, affected with catarrhal inflammation, it is due either to a peculiar idiosyncrasy, which is rare, or to pent-up and altered secretions.

CHAPTER IV

INSTRUMENTS FOR EXAMINATION OF THE NASAL CAVITIES.

THE following are essential: 1, nasal speculum; 2, small rhinoscopic mirror; 3, tongue-depressor; 4, head-reflector; 5, a long delicate probe; 6, an argand gas-burner. With the above instruments and one element, *i.e.*, light, all investigations of the kind being considered may properly be made.



FIG. 6.—Goodwillie's Nasal Speculum.

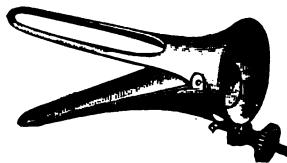


FIG. 7.—Collin's Modification of Duplay's Nasal Speculum.

1. *Nasal specula*.—There are many kinds. The one I usually prefer is that known as Goodwillie's (Fig. 6). It is efficient,

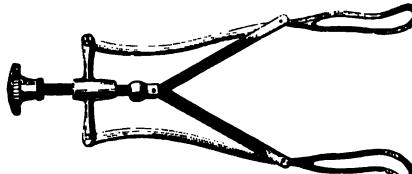


FIG. 8.—Fraenkel's Nasal Speculum.

light in structure, and easily manipulated, and, also, has an additional advantage in that it can be made to hold itself within the anterior nares. To make use of it properly, it should be introduced into the nares so that the loop of the middle division of the speculum should press the nares outward, and those of the other divisions should expand the nares above and below. Of the other specula, Fraenkel's (Fig. 8) is occasionally advantageous when we desire to introduce the blades at the same time into both nostrils; and Duplay's (Fig. 7), as modified by M. Collin, of Paris, when we desire to cauterize the mucous membrane of the turbinated bones, without danger of touching the septum or the sides of the nostrils with the caustic employed. This instrument consists of two blades, one of which is fenestrated,

and, after introduction into the nostril, is easily retained in position by adjusting the screw. Dr. D. H. Goodwillie, of this city, has had constructed for use with the galvano-caustic wire and with Pacquelin's thermo-cautery, a number of specula in annealed glass, usually more or less funnel-shaped, which meet two indications very well, *i.e.*, 1, considerable isolation of heat; and 2, inalterability by acids. These specula of Goodwillie have been modified advantageously by Dr. J. O. Roe, of Rochester, N. Y., in that an ivory blade, passing through a slide on one side, has been added * (Fig. 9).

Latterly, Dr. Thomas R. French, of Brooklyn, has offered to the profession an improved form of speculum for use in the application of galvano-cautery to the nasal mucous membrane. The accompanying illustration (Fig. 10) represents this speculum, which is a safer and more efficient instrument for its purpose than those hitherto employed.

Its description and method of introduction into the nasal passage is given by the inventor in the following words: "It consists of an ivory slide, like that in Shurley's speculum, though longer, which moves freely in a clamp, the clamp being fastened in the side of a funnel-shaped shield of silver by a hinge. At the upper and back part of the shield is a bridge of metal, through

which passes a screw with a milled head. When the screw is turned, the upper end of the slide is pressed into the bell-part of the shield, thus separating the long end of the slide from the small extremity of the shield.

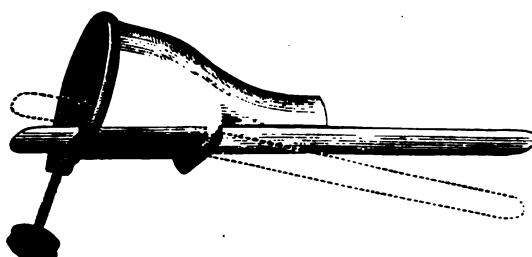


FIG. 10.—French's Improved Nasal Speculum.

"The instrument with the slide partly withdrawn and in contact with the small end of shield, is inserted into the nasal passage and pushed inward as far as it will go. The slide is then thrust in so that the end lies at a little greater depth than it is intended to burn. By a few turns of the screw the long end of the slide and the small end of the shield are separated, thus dilating the nostril as far as each individual case requires."

2. *Rhinoscopic mirror* (Fig. 11).—This mirror resembles closely

* *Vide New York Medical Record, April 30, 1881, Fig. 8.*

the ordinary laryngeal mirror, except that its dimensions are smaller. It should be circular, covered with amalgam posteriorly, have a plain reflecting surface, be set in German silver, or silver-gilt, and inclined at an angle of 120° to 140° . Its diameter must usually be about five-eighths of an inch, its thick-



FIG. 11.—Rhinoscopic Mirror.

ness one-twentieth of an inch. The stem or shank should be straight,* of flexible metal, about four inches in length, and soldered to the back of the mirror ; it may, however, be made to slide in a hollow handle of hard wood, and be lengthened or shortened, according to the depth of the mouth, by means of a button and screw. A movable handle is convenient, as it can be used with mirrors of different sizes and shapes, if required, the only objection being that the button and screw at times become loose, and one may be left without means of proper examination.

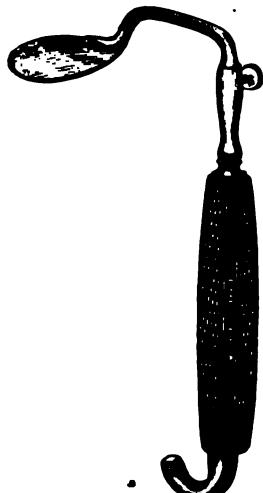


FIG. 12.—Turck's Tongue-depressor.



FIG. 13.—Folding Tongue-depressor.

3. *Tongue-depressor* (Fig. 12).—Turck's tongue-depressor is the best, as the left hand is kept away from the median line during its employment, and does not get in the way of the small mirror. It is made of metal, with a wooden handle, and is provided with several tongue-pieces of different sizes, so as to be applicable to children and adults : the under surface of the tongue-piece is

* According to Browne, it should be slightly curved.

roughened, in order to secure a better hold of a large or unruly member. An ordinary folding tongue-depressor (Fig. 13) is more suitable when a posterior rhinoscopic examination is made at the patient's house, on account of its portability. In making use of any suitable form of tongue-depressor, the effort should be to press the base of the tongue downward and forward, and thus facilitate the introduction of the small mirror by enlarging the posterior buccal space. This act is readily accomplished with a tongue-depressor lately introduced by Dr. Goodwillie,* in which the portion of the instrument which enters the mouth is made concave upon its lower surface. Owing to this concavity the convex dorsum of the tongue, so pronounced in certain patients, fits exactly into the depressor. When pressure is made upon the tongue, a vacuum is produced between the tongue and the mouth-piece of the depressor, and thus the latter is held more firmly in place, and the tongue itself may be managed with greater ease by the operator.

4. *Laryngeal reflector* (Fig. 14).—It should be a circular mirror, about three and a half inches in diameter, with an oblong aperture in the centre. It should be slightly concave, with a focal distance of fourteen to fifteen inches, and attached either to an elastic head-band, with support and buckle (Kramer), or to a spectacle frame (Mackenzie) by means of a ball-and-socket joint, which allows the mirror to be moved in any direction at will.



FIG. 14.—Laryngeal Reflector.



FIG. 15.—Probe.

The mirror can be worn before the right eye, upon the forehead, or in front of the nose and mouth; either method is good, and is usually determined by habit. Of course, if the mirror be carried on the forehead, a perforation in its centre is not essential.

5. *Probe* (Fig. 15) should be made of aluminium or silver; it is then easily pliable and particularly suited for all necessary explorations into the anterior nares or post-nasal space.

In certain cases, also, a uvula-holder may be required (Fig.

* *Vide* New York Medical Record, July 14, 1883.

16); my own experience, however, would go to prove that, in almost every instance any attempted control of the palate by such means will only increase the difficulty of the examination.



FIG. 10.—Uvula-holders.

Of instruments which combine the use of the rhinoscopic mirror with palate-ring, thus giving freedom to one of the hands of the operator, that of Duplay (Fig. 17) seems to me to be preferable.

When the space between the velum and pharynx is small, it may be enlarged by drawing the free margin of the palate forward into the mouth, by means of two india-rubber cords, according to the method of Dr. Philip S. Wales, described further on in the treatment of chronic follicular disease of the naso-pharyngeal space.

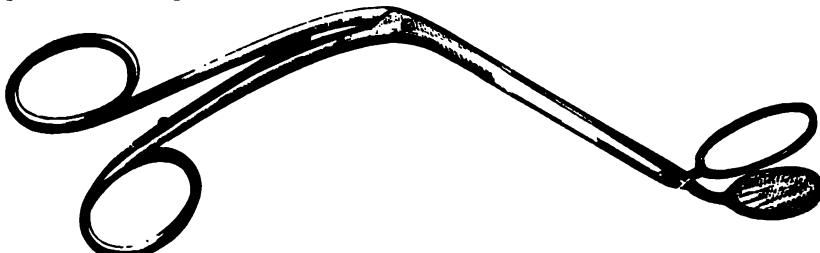


FIG. 17.—Duplay's Combined Rhinoscopic Mirror and Palate-ring.

Professor Voltolini recommends highly a new form of palate-hook, which is described and figured in his work on "Rhinoscopy and Pharyngoscopy,"* for the purpose of drawing the velum forward in all operations in the pharyngo-nasal space. This palate-hook pulls upon the velum in its entire extent, and thus prevents the arching backward of its central portion and interference with inspection of the naso-pharynx, which is apt to occur when the velum is drawn forward and downward, by means of a tape passed through each nasal passage. The palate-



FIG. 18.—Voltolini's Palate-hook.

hook should be introduced boldly and confidently, and not with an uncertain hand. Otherwise, intolerance for its presence is quickly manifested. In those cases in which the soft palate approximates closely the pharyngeal wall, it should first be relaxed by the patient's phonating "on," and the palate-hook should be

* *Die Rhinoscopie und Pharyngoskopie*, Brockhaus, 1879, p. 17, Fig. 4.

quickly introduced behind its free margin. In instances where either or both nasal fossæ are obstructed by a growth to such an extent that a tape, or rubber cord, cannot be passed through them, the new palate-hook is particularly advantageous.

Professor Voltolini reports a case of large pharyngo-nasal tumor in a young woman which could not even be seen without the use of his palate-hook, and yet with the aid it afforded him by enlarging the naso-pharynx, he was enabled to remove it successfully, in two sittings, by means of a steel wire loop and tube bent upward, under the guidance of the rhinoscopic mirror.

6. *Argand gas-burner.*—The most perfect lamp without question, for rhinoscopic examinations, is that known as the rack-movement lamp, of Mackenzie (Fig. 19). This lamp readily admits of perpendicular and horizontal movement, and the rack and handle upon the lower tube enable one to place it at any



FIG. 19.—Mackenzie's Rack-movement Lamp.

height which may be desired ; the gas-arm may be screwed to a gas-pipe projecting from the wall, as above shown, or may be attached to an upright bar fixed in a stable square base. A metal chimney, colored in black, inside of which is another in glass, which prevents the light from smoking, and the transmission of too much heat laterally, is a useful addition. The metal chimney should have a circular aperature upon one aspect, into which a plano-convex lens is fitted ; this lens placed in front of the flame will considerably increase the power of the light, provided it be placed at its exact focal distance, with its plane face directed toward the flame ; it will, also, concentrate the rays of artificial light upon the head reflector, and thus help to form a broader and more uniform disc of light in the back part of the patient's throat, when the reflector is turned in that direction. Instead of artificial light afforded by the combustion of gas or oil, the solar rays, on a bright day, may be projected upon the laryngeal mirror, after being first concentrated by the reflector.

Dr. S. S. Cohen has recently directed attention to a very sim-

ple method of employing the electric light in laryngoscopy, instead of the flame from gas or oil. All that is required is an incandescent lamp, which can be had for a very moderate sum at any one of the electric-supply shops, and a Flemming's "Universal Battery." The lamp, itself, is readily mounted on a Mackenzie's bracket provided with the condenser, and a current switch attachment is added to it. A constant current from ten cells, when the battery fluid is fresh, is sufficient to produce a soft, white light of great intensity, and which is inferior only to sunlight. This new practical method of electric illumination



FIG. 20.—Goodwin's Oral Speculum.

is far more recommendable than the elaborate forms of "electric laryngoscopes" devised by Helot, Trouvè, and others.*

In addition to the foregoing instrument, a convenient and efficient oral speculum is often very essential in many operations in the mouth, upon the palate, or in the post-nasal space. Such an instrument is figured here (Fig. 20). The two tooth-cups which should be lined with soft rubber, or guita-percha, hold two molars securely in place. The sliding ring allows the operator to distend the mouth to any desirable extent, and may be easily released and slid toward the centre of the shaft, which lies in close juxtaposition with the cheek. The handle enables an assistant to control the position of the patient's head.

CHAPTER V.

INSTRUMENTS FOR THE TREATMENT OF THE NASAL CAVITIES.

I. INSTRUMENTS FOR CLEANSING PURPOSES.

1. *Different forms of douche apparatus.*—These are all simple modifications of the one originally known as Weber's, and later as Thudichum's (Fig. 21). They consist mainly of a reservoir for liquid, a piece of rubber tubing, and a nozzle made to fit the anterior nares. When the reservoir containing fluid is placed at a height above the level of the patient's nose, and the nozzle introduced into this organ, there will be a continuous outflow, the force of the current being in proportion to the degree of elevation of the reservoir. There can be but little doubt that the nasal douche, as a cleansing apparatus, is tolerably effective, although not nearly so thorough in its action as has been generally admitted (Fig. 22). I do not believe that either the vault of the pharynx, or the superior meatus and turbinate bones are cleansed at all by the nasal douche ; true it is that a great deal of inspissated mucus, hard crusts, and soft fetid secretions are frequently brought away, and I was disposed for a long while to console myself in the belief that the nasal cavities were effectually rinsed at the termination of each operation. Experience, however, has taught me the fallacy of such a belief, and now that I inspect the nares anteriorly after these washings, and what is still better, make a rhinoscopic examination posteriorly, when it is possible, I find at times there still remains at the top of the pharynx, or around or contained in the posterior openings of the nose, strings of viscid mucus which have been left untouched. Whenever this proof is wanting, we shall have to consider the striking clinical fact of a crust, or large mussel-shaped bit of mucus being expelled from the nose after what we inferred wrongly had been a most complete cleansing. The explanation of this phenomenon

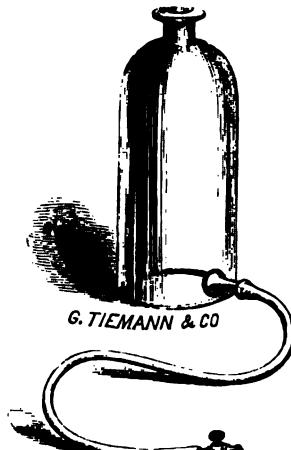


FIG. 21.—Thudichum's Nasal Douche.

is readily found. Large pieces of mucus have become detached from the roof of the nose, and more particularly from the cribiform plate of the ethmoid bone, the posterior surface of the nasal bones, and the upper turbinate bones, owing no doubt to increased temporary secretion, brought on by the use of the douche, and have fallen to the floor of the nasal cavities. Here they have been the occasion of more or less unpleasant and abnormal sensations, and a strong effort of expiration is sufficient to expel or throw them off altogether. While much of the irritating and concrete mucus is thus got rid of, a certain amount remains behind, and, by the morbid alterations which it assumes, is the source of further disease, or at all events, by its constant contact with parts already diseased, protracts or renders impossible the return of these latter to their normal state. (Any one who doubts the validity of my statements will find them fully substantiated in an article published by me in the *New York Medical Record*, July 15, 1874, entitled "The Nasal Douche, What it Accomplishes, and What it Does Not." As stated in that article, I feel myself indebted for some of my ideas to Dr. Thomas F. Rumbold, of St. Louis.)



FIG. 22.—Antero-posterior section of the face and head (Rumbold). *a*, Inferior turbinate bone; *b*, middle turbinate bone; *c*, superior turbinate bone; *d-d*, location of incusations to be removed; *e*, line showing the height of the water in the nasal passage irrigated by the Weber douche. "Dotted line" indicates the position of the posterior border of the septum nasi, the turning-point of the liquid in leaving the other nasal passage.

ough in the sense of penetrating all parts of the nasal fossæ, my opposition to its employment would not be so intense as it is; but being familiar with the frequent inflammatory diseases of the ear occasioned by its use, I am convinced, for this reason, it ought not to be used. It is not sufficient to urge, as Fraenkel and others have done, that, with proper precautions, the injurious effects upon the auditory apparatus may be wholly avoided. Perhaps this is true, but I, for one, am of opinion that no instrument in regard to which a lack of attention, while employing it, is frequently followed by grave and lasting disorders, should be commended by the profession—particularly for general use by the laity. Moreover, I now believe, as many closely observed cases have proved it to me, beyond a shade of doubt, that the

relief from obstruction afforded by the douche is merely temporary, never permanent.

Besides, if its use be persisted in, it will ultimately fail to effect temporary good results. It will even occasion at times permanent blocking up of the nasal cavities, produce anosmia, blunt the taste, and not infrequently cause inflammation of the conjunctivæ.

2. *Different forms of syringes.*—Whenever cleansing instruments are required, syringes may be employed with less injurious effects following their use than the continuous nasal douche. The most recommendable forms are Warner's catarrhal douche (Fig. 23), and the ordinary posterior nares syringe in hard rubber (Fig. 24). I have never known a case of serious ear trouble follow the use of the instruments just mentioned; but I have heard patients speak several times of unpleasant, itchy sensations in the ears after their employment—and I have little doubt myself that, if an effort of deglutition be made several times during their use, a certain quantity of water will penetrate, almost of necessity, into the Eustachian tubes, and be carried on into the tympanic cavity, where it doubtless causes slight trouble for the while, and may become, if repeated frequently, the starting-point of imperfect audition (subacute aural catarrh).

In regard to the nose, I am quite sure that syringing by means of a divided and interrupted jet or stream will, without question, ultimately produce permanent infiltration of the mucous and submucous

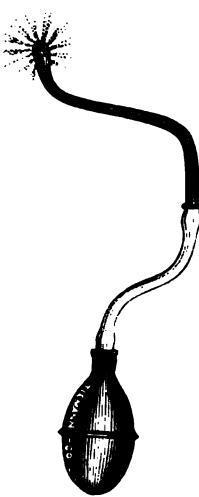


FIG. 23.—Warner's Catarrhal Douche.



FIG. 24.—Posterior Nares Syringe.

layers, and thus more or less blocking up of the nasal passages. The employment of these instruments should be restricted, therefore, if used at all, to exceptional cases of very aggravated catarrhal inflammation of the nasal fossæ, usually accompanied with fetid odor and pent-up, hardened secretions. In ordinary catarrhal disease, their use is never required, and it can be substituted by other means quite as effectual, and far less liable to cause harm.

3. *Atomizers.*—The one which I have found, most useful, and which I cordially recommend, is that known as the hard-rubber

spray-producer (Fig. 25) of Dr. George M. Lefferts, of this city. By its means, and with some persistence in its use, I have been able to rid even the worst cases of old, hardened, pent-up fetid secretions. There may be cases in which the instrument known



FIG. 25.—Lefferts' Spray-producer.

as Dr. Rumbold's catheter nasal douche (Fig. 26)* is useful in ridding a patient of crusts which are situated very high up in the nasal fossæ. After a pretty thorough trial, however, with this instrument, I have abandoned its employment, first, on account of its bulk and somewhat unwieldy nature, and then, too, because I found it more painful in use than Dr. Lefferts' spray-producer, without any appreciable compensating good results

accompanying its employment. As Dr. Rumbold speaks of his instrument in very warm terms, after frequent and long-con-

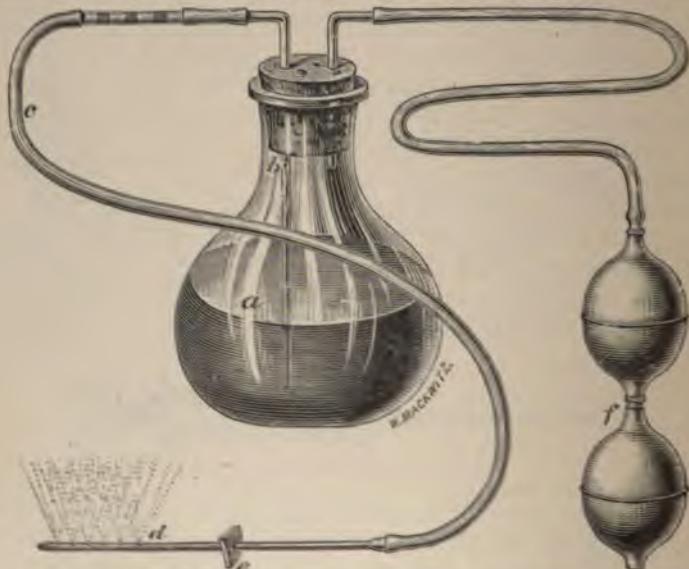


FIG. 26.—Catheter Nasal Douche (reduced one-third). *a*, reservoir; *b*, metal tube for the passage of the fluid, having a small aperture in its side for the entrance of air; *c*, rubber tube; *d*, foramina for escape of coarse spray; *e*, catheter; *f*, India-rubber air-bulbs, used to force air in the bottle.

tinued trials of it, I prefer to add the description accompanying his original wood-cut: "It is a flask-shaped bottle (*a*) holding

* This is really a misnomer, as the instrument referred to throws "a coarse spray, or spattering current of liquid and air."

about one and a half pint. Into the rubber stopper are inserted two metal tubes, whose outer extremities are bent at right angles and turned in opposite directions. One of these only pierces the stopper and has attached to it the India-rubber bulbs (*f*); the other almost reaches the bottom of the vessel (*b*), and has attached to its outer extremity a rubber hose (*c*); and to the hose is fastened a No. 4 catheter (*e*), on a line with its axis. The free extremity of the catheter is closed. The tube, whose lower extremity dips into the medicated fluid, has a small aperture in its sides, just under the rubber cork (*b*); * this is to allow the air to enter during the passage of the liquid, the effect of which is causing the tube to contain beads of air and fluid in close succession, so that when escaping from the small openings in the catheter it will resemble a coarse spray. The catheter is introduced into the affected nostril, and the stream directed upward (Fig. 27). A slight rotation on its axis will cause the spattering current of fluid and air to *wash* and *blow* the secretions away from their lodging places in a milder and yet more efficient manner than a steady flow of liquid. The cleansing process may be greatly assisted by the patient closing the nostril that is not treated, and then giving a quick and forcible blow out of the one being washed, sending the liquid and everything loose out with great force."

A nose-spout (Fig. 28), to be used by the patient, resembling an ear-spout, will be useful in preventing the liquid and muco-purulent secretions from falling on the lips, and from soiling the clothing while blowing the nose. This same author speaks of a simple mode of cleansing the nasal and pharyngo-nasal passages † "for all patients whose secretions do not become locked in the nasal cavities by reason of their hardness and size." This method consists essentially in inclining the forehead at different angles to the horizon, and then inhaling liquids from

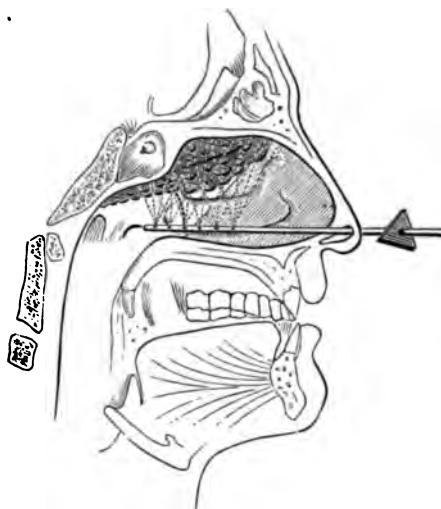


FIG. 27.—Showing the Catheter in Position in the Left Nasal Fossa (Rumbold).

* This opening should neither be too large nor too small, as either will prevent the formation of a coarse spray and thus interfere with the efficacy of the instrument.

† Chicago Medical Journal and Examiner, May, 1877.

the hollow hand with sufficient force to penetrate all parts of the nasal fossæ and thus rid them of all adherent secretions. For a poor class of patients, whose circumstances do not permit them to purchase an atomizer, this procedure may perhaps be adopted for a brief period with advantage, but should not be continued so soon as the offensive obstructive crusts are removed.

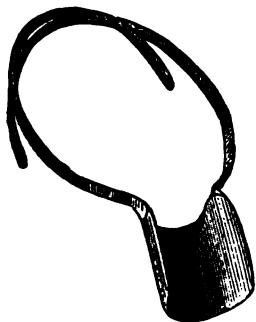


FIG. 28.—Rumbold's Nose-spatula.

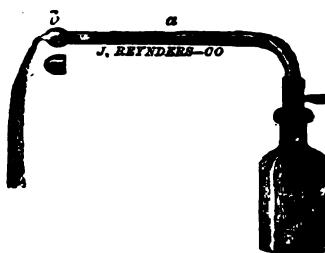


FIG. 29.—Hard-rubber Atomizer.

II. INSTRUMENTS FOR MEDICATION OF THE NASAL CAVITIES.

1. *Douche apparatus and syringes*.—A thorough and wide experience has proven to me beyond a doubt that, as a means of curative medication of inflammatory affections of the nasal fossæ, these instruments are of little, if any, use. Besides the reasons already given, I would add that solutions of sufficient strength to be really curative in their action cannot be employed in this manner without causing a considerable degree of pain of the head and eyes, which will last at times during several hours.

2. *Atomizers*.—A coarse-spray producer (*vide* Fig. 25) sometimes, and fine-spray producers more frequently, have afforded me beneficial results. The ordinary hard-rubber atomizer (Fig. 29), to which may be attached a tip curved at a more or less acute angle for spraying the posterior nares, and naso-pharyngeal space, and the glass spray tubes of Sass (Fig. 30) attached by means of India-rubber tubing to a cylinder of compressed air, in which the amount of pressure is regulated by a gauge at the top and the air let in, or cut off at any moment by stopcocks placed both on the cylinder near the tubing attachments, and upon the tubing itself near the atomizing tubes, have been used by me with much satisfaction. The rubber tubing from the cylinder may be made to fit to that on the glass atomizers by means of a bayonet joint. This arrangement makes their adaptation ready and secure. Codman & Shurtleff, of Boston, have in-

vented a self-closing cut-off, which may be easily connected with any tubes now in use (Fig. 31). It is of form and size to adapt it to be conveniently held in the hand together with a vial of medicament and an atomizing tube. It is used in connection

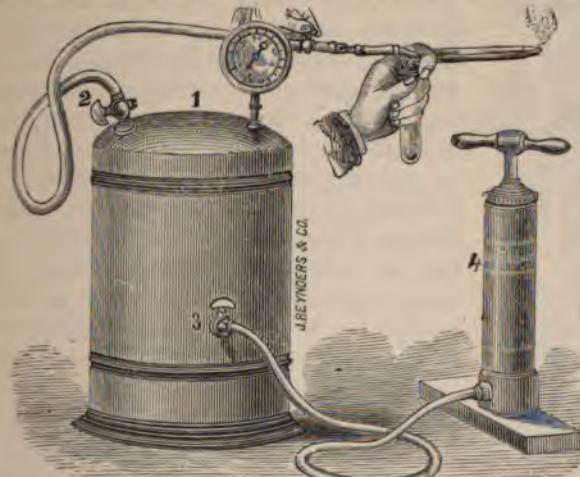


FIG. 30.—Sass' Air-pump, Receiver, and Glass Atomizing Tubes.

with a receiver of compressed air, and is formed to be conveniently and securely attached by means of a screw-joint (B) to the flexible air-supplying tube (E) leading therefrom on the one hand, and on the other to any of the atomizing tubes (A) in ordinary use.

Air admitted from the receiver is arrested by the cut-off (D) which is self-closing, or by gentle pressure of the thumb (at C) it is allowed to pass to the atomizing tube.

The action of the cut-off is such that, while the atomizing tube may be directed with definiteness, atomized fluid may on the instant be made to flow or to cease, and may also be regulated in force and in volume with the utmost nicety and convenience. It is said by the inventors, Codman & Shurtleff, of Boston, that some of the most valuable features of the cut-off have been overlooked or omitted in all of its numerous imitations.

A new air-compressor, known as the Burgess instrument, can be recommended on account of its simplicity and efficiency. It is sold at a moderate price and is capable under a pressure of ten



FIG. 31.—Self-closing Cut-off.

pounds of maintaining a spray from an atomizing tube during ten minutes.

The air is compressed in the reservoir by means of a treadle to any desired degree, under twenty pounds. Whenever the pressure in the air-chamber gets too low, it may be increased by moderate pumping with the foot. The air-chamber, however, has sufficient capacity for air under pressure of from ten to twelve pounds, to make applications to three or four patients in succession without pumping. While a constant strong or gentle spray can be maintained with one hand, the other is left free for any necessary manipulation. A cut-off may be attached to the rubber tubing connected with the instrument, or the projection of the spray may be controlled by pressure with the thumb of the right hand at the point of union of the tubing with the atomizer.

FIG. 32.—Burgess' Air-compressor.

Dr. William C. Wile, of Sandy Hook, Conn., has also lately introduced to the notice of the profession a new spray apparatus, which promises to be most satisfactory in its working. The air-receiver, which is of large size, is nevertheless filled by a few easy strokes of the lever. It is tested to a very high pressure, so that it is evidently a safe instrument. The spray-tubes are after the pattern of Sass, but, instead of being made of two glass tubes cemented together, which are liable to break, or separate, are made of one solid piece of hard rubber, and the tips are screwed in and made interchangeable.



FIG. 33.—Wile's Spray Apparatus.

Besides these instruments, an improved form of air-pump, invented and manufactured by C. Beseler, New York, may now be used as a very convenient and effective instrument for filling the receiver of a physician's spray apparatus. It is capable, with but little fatigue to the operator, and in a few moments of time, of compressing fifty or more pounds to the square inch, in an ordinary receiver. It works easily and rapidly, and the increase of pressure in the receiver does not act on the pump. It occupies a relatively small space in the office and is not a very unsightly instrument.

While advising the employment of sprays, under certain circumstances, in the treatment of catarrhal inflammations of the nose, I am not willing to do so unconditionally. In regard to their temperature, degree of strength, frequency of application, I shall detail my opinion further on. But in this place I would merely emphasize the fact that, as a general rule,

it should be understood and accepted that watery sprays are not curative in their action when introduced into the nasal cavities, unless made according to well-established rational formulæ. And in the great majority of instances, when employed in the curative treatment of nasal inflammations, they should be made use of notably to do away with two conditions :

1. The condition in which there is a marked and constantly recurrent tendency to the formation and lodgement of hard masses of inspissated mucus in some portion of these cavities, and which cannot be removed by the simple use of a handkerchief.

2. The condition characterized by bad breath, in which sprays containing carbolic and salicylic acids, Condy's fluid, etc., are most effectual temporary methods of treatment to allay or dissipate this most distressing symptom. So soon as either of the above



FIG. 35.—Mackenzie's Steam Inhaler.



FIG. 34.—Beseler's Air-pump.

conditions has disappeared completely, I am of opinion that just so soon all medication by sprays should be stopped. This opinion applies with special force to all cases of fetid breath in which the presence of hardened crusts is not discoverable and probably does not exist.

3. *Inhaling apparatus.*—The most perfect instrument for inhaling vapors is that known as the eclectic inhaler of Dr. Morell Mackenzie, of London. This inhaler (Fig. 35) may be used for steam inhalations, cold inhalations, and dry inhalations, and adapted to the nose by simply changing the form of the piece at the distal extremity of the flexible tube. When steam is inhaled, it is usually impregnated with some volatile substance. The temperature of the water placed in the vase of an inhaler of this kind should be about 150° F., and the inhalation carried on slowly from ten to fifteen minutes, and repeated in one hour or two if benefit is derived from it. A less expensive and simpler form of steam-inhaler is Hunter's (Fig. 36), to which may also

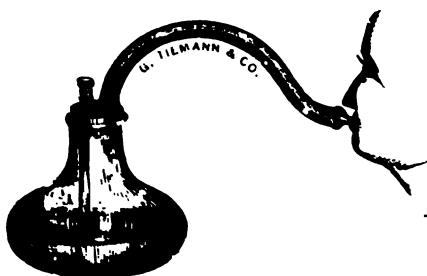


FIG. 36.—Hunter's Inhaler.



FIG. 37.—Steam Atomizer (after the principle of Siegle).

be attached a suitable nozzle for inhalations through the nose. When the medicated fluid is atomized by means of and impregnated with steam, according to Siegle's principle (Fig. 37), it acts very much like a vapor inhalation. In order to use this form of inhaler in the treatment of nasal inflammations, it is essential to have fitted to it a special glass shield for directing the medicated steam properly. Steam, or warm atomized inhalations are only of real service in cases of acute coryza, or in old catarrhal cases, when the nasal mucous membrane is dry and irritable. In other forms they exercise no evident beneficial effects, and are apt to increase the quantity of secretions. Cold medicated aqueous inhalations are taken at about the ambient temperature, and are indicated when hot inhalations cause headache and faintness. They should be double the strength of hot vapor inhalations. Dry cold inhalations of volatile matters have rendered me good service in old catarrhal affections of the nasal

fossæ and when the secretion is excessive, they diminish it in a notable degree. The apparatus of A. H. Smith (Fig. 38), or Buttles (Fig. 39), may be employed with advantage in this latter method of inhalation. Dry hot inhalations, in which the volatile matters are vaporized by heat, are difficult of administration, and

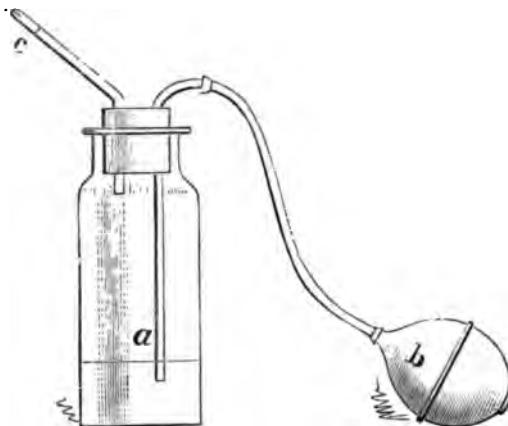


FIG. 38.—Apparatus for Injecting Vapor into the Nasal Passages (Smith).

are not advised. Fuming inhalations, or inhalations derived from the smoke of ignited papers steeped in a solution of nitrate of potash, have never been employed, so far as I know, in the treatment of inflammatory affections of the nasal fossæ. Upon occasions when spasmodic contraction of the bronchial tubes is evidently under the dependence of infiltration of the soft tissues covering the turbinated bones, their use would be indicated.

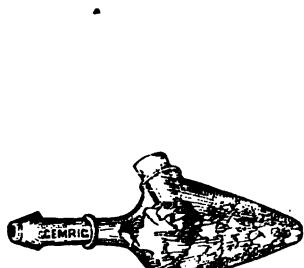


FIG. 39.—Buttles' Nasal Inhaler.



FIG. 40.—Anterior Nasal Powder-blower (Smith).

4. *Powder-blowers*.—One of the most generally useful is a form (Fig. 40) for blowing powders into the anterior nasal passages, first made known to me by Dr. Andrew H. Smith, of New York. This powder-blower I have myself slightly modified for the posterior nares (Fig. 41). It consists mainly of a glass bottle with a wide mouth, and a capacity of about two ounces.

The India-rubber stopper is perforated with two holes, into each of which a bent tube of hard rubber is inserted. One of these tubes reaches nearly to the bottom of the bottle, the other merely passes through the cork. The former, at its outer extremity, is curved forward, and without change of configuration, to an angle of 120° . The diameter of the terminal orifice of this tube should not be greater than one-eighth of an inch; otherwise an excess of powder may be thrown behind the velum when the instrument is used, and produce a most unpleasant feeling of stuffiness, which lasts one or two hours. The short tube is connected with a hand-ball by means of India-rubber tubing. One or two rapid and forcible pressures of the hand-ball suffice to force the medicated powder into the



FIG. 41.—Posterior Nasal Powder-blower.

nasal passages, and cover the turbinated bones and the adjacent parts, either anteriorly or posteriorly, with a coating of it.* Dr. D. H. Goodwillie has improved the powder-blower of

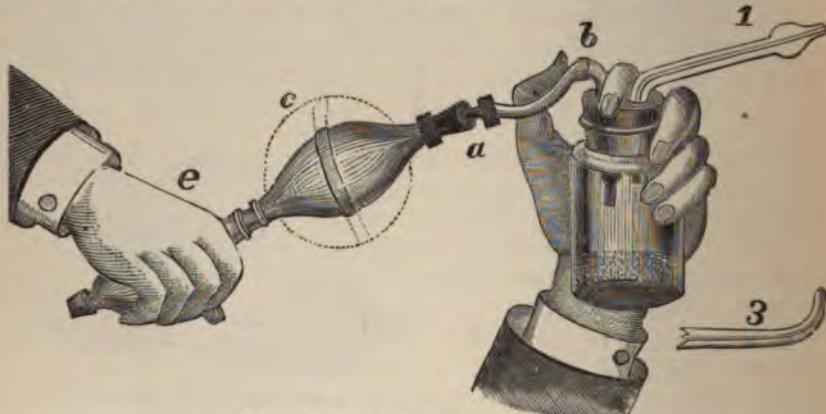


FIG. 42.—Goodwillie's Powder-blower.

nasal passages, and cover the turbinated bones and the adjacent parts, either anteriorly or posteriorly, with a coating of it.* Dr. D. H. Goodwillie has improved the powder-blower of

* The bent rubber tube, in the form of powder-blower described, should never have a movable tip at its further extremity, as this may fall off at times and occasion dangerous choking. This accident occurred to me once.

Dr. A. H. Smith, by substituting thick glass tubes for those in hard rubber, and by affixing valves to the tubes inside the bottle, so that the receptacle for the powder is closed to the outer air, except when it is in use. The accompanying figure (Fig. 42) shows the two forms of glass tubes used for the anterior and posterior nares, and the manner in which the instrument is held by the physician while employing it. The rubber balls are joined to, and separated from, the bottle by a hard-rubber attachment (a). The two rubber balls (e, c) are closely connected together with a valve between them. The ball c can be distended more or less. When an application of powder is to be made, press the thumb of the left hand firmly on the rubber tube over the end of the glass air-tube (b), so as to close entirely the passage of any air into the bottle. Now force by the hand the air in the rubber ball (e) into the ball (c), and distend it as much as may be desirable. Before applying the powder, the patient should be directed to blow his nose thoroughly and to in-

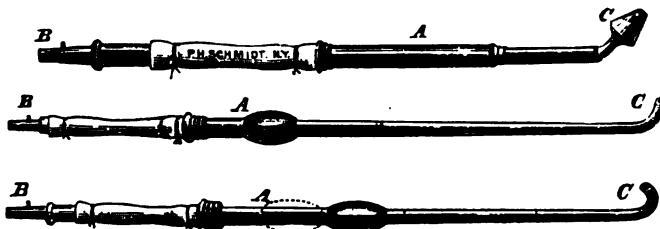


FIG. 43.—Hard-rubber Powder-blowing Tubes for the Nasal Passages.

hale moderately while the powder is being blown, so that it may cover entirely the inflamed nasal mucous membrane. Whenever there is advanced hypertrophic catarrh it is essential to make use of the straight tube for the anterior nares (1), and of the curved one for the post-nasal space (3). I also make use daily of a series of hard-rubber powder-blowers, straight, or of somewhat different curves at their distal extremities, which are attached to tubing connected with Sass' cylinder of condensed air, and in this way, by making use of air-pressure from five to twenty pounds, enable me to medicate most effectually, in very many instances, the anterior and posterior nasal passages. These rubber tubes, with the cups which contain the powders, are shown in the annexed figures (Fig. 43). If the practitioner should not own Sass' cylinder, he may readily attach any one of my tubes to soft-rubber tubing, fitted at the other end with a mouth-piece, or with a hand-ball, and either blow or force the powder through the nasal passages. If a hand-ball be used, it is essential to have a poppet-valve in the hard-rubber tube, so that if the ball be squeezed more than once, the powder will not be

sucked back in the tubing. Another form of hard-rubber powder-blower, with ball, may also be used for medication of the posterior and nasal passages (Fig. 44).

In order to locate the application of the powder in the nasopharyngeal space, without the necessity of covering the entire nasal fossæ with it, as is true when we make use of the ordinary anterior nasal powder-blower, Dr. T. Hamilton Burch has made a useful modification of this instrument. He has had a



FIG. 44.—Hard-rubber Powder-blower with Ball.

powder-blower constructed (Fig. 45) with a long, narrow, hard-rubber tube, and several terminal orifices, which may be passed directly through the lower meatus until it almost touches the pharynx. In this position the bulb is squeezed, and the powder projected where it is required.

For those cases of deviated septum, mucous polypi, bony obstructions, or advanced hypertrophic catarrh, where it would be painful and difficult to pass a resisting straight tube, Dr.

Burch makes use of soft-rubber tubes of suitable calibre, which are fastened over a hard-rubber projection from the stopper. In the treatment of small children, also, who will not open their mouths for the introduction of my posterior rubber tubes, this suggestion is a useful one.



FIG. 45.—Burch's Nasal Powder-blower.

made for him on the following plan: The sponge, or cotton wad, used in local applications, is firmly secured by means of a slot in one of the branches, firmly locked by means of a long wedge-shaped bolt upon the other branch. This instrument is free from the objections to spring catches, which are apt to become insecure after repeated usage, and bids fair to realize the idea of a perfectly safe and reliable sponge-holder.

Dr. Sajous has modified Cohen's forceps so as to adapt them to post-nasal applications (Fig. 46). In order to effect this, while he has retained the spring, slide, and catch of Dr. Cohen's instru-

ment, he has modified the length and shape of the curve, which, instead of a right angle, assumes that of the arc of a circle, with retrocession of the tip toward the centre. In the posterior nares, this peculiar curve renders it available for applications to the turbinate mucous membrane, mouth of the Eustachian tubes, pharyngeal vault, etc., the position of the tip being regulated by that of the handle.

During the past six months I have made use daily of Elsberg's improved sponge-holder, adapted for use in the naso-pharyngeal space, by diminishing the length of the upward curve and making the instrument generally somewhat lighter than the one that I employ in making applications to the larynx.

Despite Dr. Cohen's well-founded objection to the use of spring catches generally, the one in the handle of Elsberg's instrument has thus far remained in good working order, and I have proved it to be one of the most convenient and safest instruments of which I have any knowledge (Fig. 47). It consists essentially of two blades joined together by the ordinary obstetric forceps lock and a spring slide or catch. The handles are closed completely, after the lock is properly adjusted, by simple pressure with the hands. While the instrument is in use, the handles are prevented from separating by the slide, and the sponge is securely and tightly grasped. So soon as the slide is withdrawn

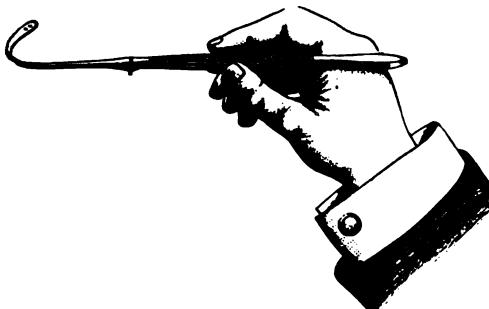


FIG. 46.—Sajous' Modification of Cohen's Foroeps.

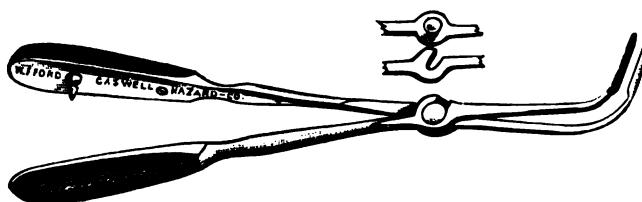


FIG. 47.—Elsberg's Sponge-holder.

by forward pressure with the thumb upon a knob in one handle, both handles come apart, the blades separate, and the sponge is easily detached, or falls out from the serrated extremity. An additional recommendation to this instrument is, that it is cleaned with ease, when its two parts are entirely separated. Although the two instruments just described are termed "sponge-holders," they serve equally well to carry a plegget of cotton, or

other soft, compressible substances. They are, in my opinion, far superior to the brushes I formerly used, on account of their greater safety, cleanliness, and *finally*, cheapness. The same instrument can be used rapidly and repeatedly, merely by dipping it an instant in carbolized water and inserting a fresh piece of sponge between the blades.

CHAPTER VI.

ANTERIOR AND POSTERIOR RHINOSCOPY.

THE examination of the nasal fossæ, or rhinoscopy, may be practised in two different manners. 1. By the anterior nares

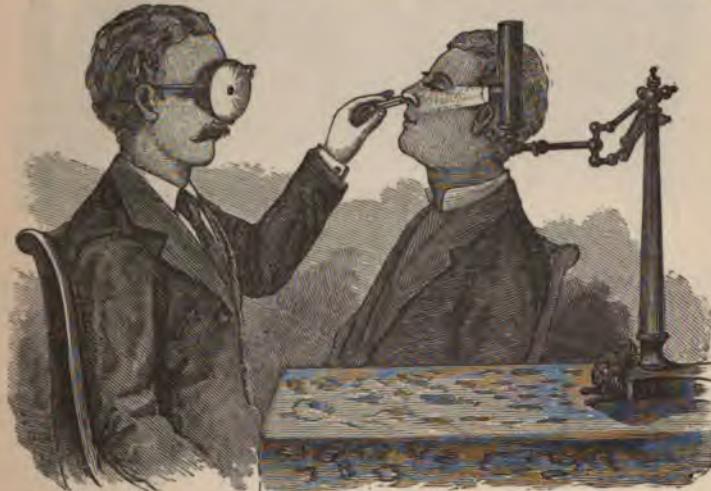


FIG. 48.—Examination of the Nasal Fossæ by means of the Nasal Speculum.

(anterior rhinoscopy). 2. By the palato-pharyngeal space (posterior rhinoscopy).

1. *Anterior rhinoscopy.* — The patient (Fig. 48) is seated in a straight-back chair, in an erect position, the head being inclined backward so as to elevate the nostrils. To this chair a head-rest (Fig. 49) similar to the one used by photographers may be attached, as it serves a very useful purpose, especially during operations, in keeping the head in a steady position. The lamp is on the table to the right of the operator, the flame of the lamp being about on a level with the eyes of the patient. The reflector is worn in front of the forehead, or right eye, precisely as it is in laryngoscopy. A focus of light is concentrated by means of the head mirror directly



FIG. 49.—Chair with Head-rest.

upon the anterior portion of the nasal passage to be examined and Goodwillie's or another convenient form of speculum is

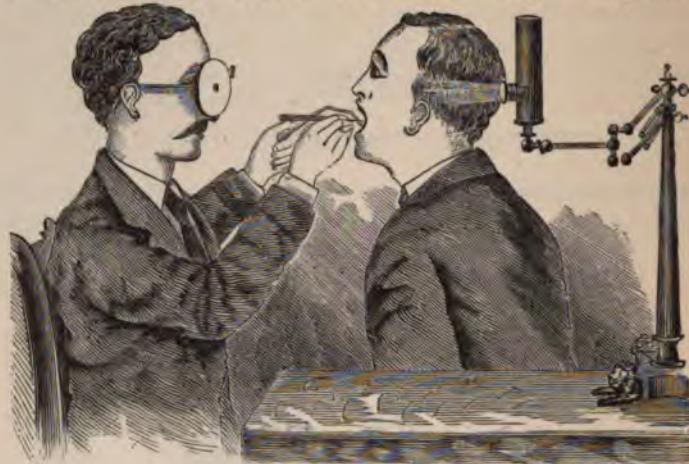


FIG. 50.—The General Arrangements for Posterior Rhinoscopy.

gently introduced into the nostril with the fingers of either hand, as far back as the junction of the cartilaginous with the

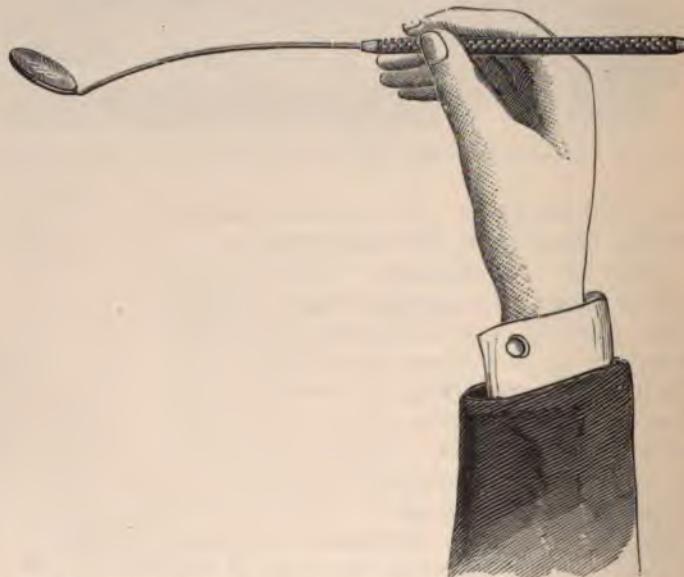


FIG. 51.—Curve of Shank of Mirror and Position of Hand necessary for Rhinoscopy (Browne).

bony portion of the nose. The speculum is then allowed to expand by the elasticity of its spring, or pressed open to the

desired limit by means of a small pedal, and fixed in position by a little screw. The parts of the fossa which are thus rendered visible vary with their normal conformation, and likewise according to the nature and degree of their diseased condition. Sometimes the middle and inferior turbinate bones, the middle and lower meatus, and the septum nasi are all distinctly seen for a considerable distance. Frequently the septum nasi is so much carried to the left that the passage on this side is almost completely obstructed. In cases of considerable hyper-

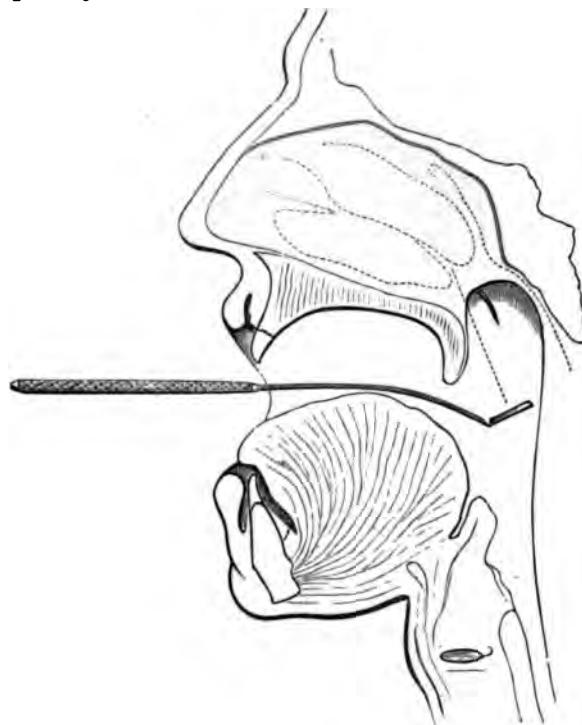


FIG. 52.—Section Showing Position of Mirror and Patient's Head for Obtaining a Rhinoscopic Image (Browne).

trophy of the turbinate bones, but little else is seen than the angry, turgid anterior extremity of the middle one of the corpora cavernosa. The instances when one can recognize the post-pharyngeal wall are extremely rare. Small mirrors introduced within the nasal fossæ, for the purpose of exploring their entire superficies, as recommended by Voltolini, are rarely of any service.

2. *Posterior rhinoscopy* (Fig. 50).—The lamp is at the same level and in the same relative position as in anterior rhinoscopy. The patient's head is inclined slightly forward. The mouth is widely opened, the tongue depressed with a tongue spatula held

in the left hand, and the focus of light reflected from the head mirror is concentrated in the back of the throat, the centre of it resting upon the base of the uvula. The patient is now requested to breathe gently through the nose so as to allow the soft palate to fall. Before its introduction the small rhinoscopic mirror is heated by its back over the lamp, until a film which forms almost immediately upon its reflecting surface has be-

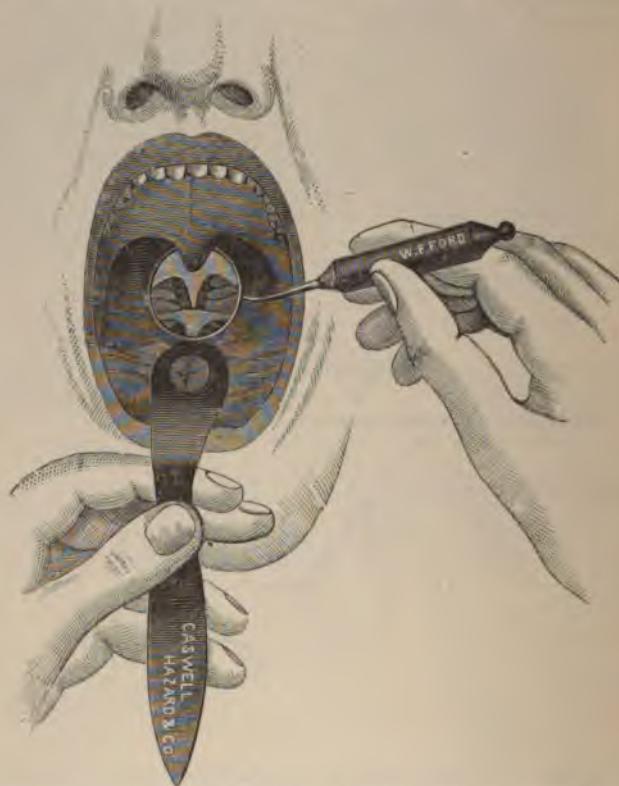


FIG. 53.—The Mirror in Position for Making a Rhinoscopic Examination, with the Parts Seen (Bosworth).

come dissipated, and then applied to the skin, so as to test its degree of warmth. Then holding the small mirror in the right hand like a pen, it is carried with its back directed downward as far posteriorly as the middle of the space between the lower border of the uvula and the pharyngeal wall. The plane reflecting surface of the mirror is held at first about at an angle of 130° with the horizon (Figs. 51 and 52). The accompanying figure, taken from Bosworth, gives an excellent idea of the relative position of the hands holding the instruments, as well as of the

rhinoscopic image itself, as it appears in the mirror when a patient submits to an examination.

After getting a correct view of the posterior border of the septum and of its lateral surfaces for a short distance within the nasal passages, the mirror is more or less inclined to the right or to the left, in order to obtain a faithful image of the turbinated bones, meatuses, and Eustachian tubes (Fig. 54). By bringing the reflecting surface of the mirror almost to a horizontal direction, the vault of the pharynx can be distinctly seen; by ap-

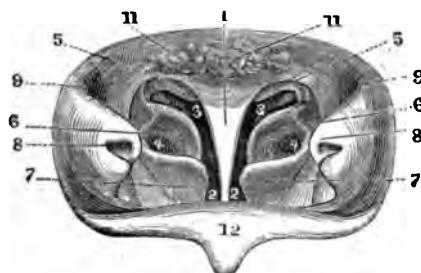


FIG. 54.—Rhinoscopic Image (Cohen). 1, Vomer or nasal septum; 2, free space of nasal passages; 3, superior meatus; 4, middle meatus; 5, superior turbinated bone; 6, middle turbinated bone; 7, inferior turbinated bone; 8, pharyngeal orifice of Eustachian tube; 9, upper portion of fossa of Rosenmüller; 10, glandular tissue at the anterior portion of the vault of the pharynx; 11, posterior surface of the velum.

proaching this same surface nearly to a vertical plane the state of the mucous membrane covering the soft palate and uvula can, at times, in part be determined. Evidently, then, from what precedes we have formed the notion, which is true, that the rhinal image is never seen in its entirety at one and the same time, but is thus composed in the mind's eye of the observer by adding one to the other a succession of accurate pictures, as it were, of different juxtaposed parts. In the above manipulations the operator can steady his hand which holds the mirror by resting the third and fourth fingers on the patient's lower jaw.

CHAPTER VII.

TAKING COLD—PROPHYLAXIS AND GENERAL REMEDIAL TREATMENT OF VARIOUS FORMS OF CORYZA.

I. TAKING COLD.

THE mechanism of taking cold is not entirely clear, notwithstanding numerous theories which have been originated in order to explain satisfactorily the clinical phenomena. Although this proposition can scarcely be denied, it may readily be admitted that many of the ordinary conditions, which are followed frequently by taking cold, are familiarly known to all men. One prevalent theory in regard to taking cold is, that any considerable chilling of the outer surface of the body, in a small or extensive area, is followed by rapid contraction of the cutaneous capillaries, and the irritation of the peripheral nerve filaments. Dependent upon these alterations, we have an unequal distribution of blood in the internal viscera, a disturbed action of the heart, and the production of inflammatory changes in one or other organ most affected, or of least resisting power. Another theory, which supplants the former in many cases, is to the effect that inflammatory changes are not produced by a localized congestion in particular structures, but rather follow, at a certain interval of time, the profound disturbance of function which of itself is the efficient and direct agent in causing inflammatory lesions. The most novel theory is that of Woakes,* who insists that "the mechanism of the chill implies vessel dilatation in the parts of least resistance, in response to an afferent impression reflexly transferred to this efferent area;" and further that "the tendency of the chemical qualities of the consequent effusion is to determine the issues of the inflammation thus brought about."

Whatever of truth there may be in these different theories, it is well known that certain factors are, as a rule, essential in producing the morbid disturbances to which we assign the term "taking cold." These are low temperature, air in motion, and moisture. Whenever any one, or all of them, are effective in diminishing bodily temperature below its normal standard of 98 $\frac{1}{2}$ ° F., an acute inflammation, and very frequently one of a portion of the upper respiratory tract, is prone to occur. The

* Post-nasal Catarrh, p. 65.

duration of time, or the other circumstances necessary to the morbid result, are related closely to the ability of the individual to generate heat. And this power is finally itself dependent upon muscular movement and thorough oxidation of food. Hence, in order to prevent taking cold, it is all-important, first, to eat and drink wisely ; not to take more food than can be properly consumed, not to allow effete substances to accumulate in the economy to its detriment. This means, in temperate and warm climates, not to eat too much meat, or drink largely of sweet or rich wines. Second, it is important to breathe a pure air and enjoy plenty of sunlight. This statement carries with it the corollary that an out-door life with a large amount of movement in it should be urged as imperative in making one proof against colds. If one leads a sedentary existence, or is continually surrounded by the air of overheated rooms, he loses in great degree the power to produce heat in sufficient quantity and rapidity, so as to resist surrounding atmospheric changes, when necessarily exposed to them.

II. PROPHYLAXIS.

Further, in the prophylaxis of inflammatory affections of the nasal fossæ, I include special attention to all other habits which proceed clearly and forcibly from a due consideration of certain familiar hygienic laws. If these habits be adopted previous to, or in anticipation of, the development of an attack of acute nasal catarrh, many such will be effectually warded off. If practised subsequent to its initial stage, in a sense they become both prophylactic and remedial ; for, while they prevent in great measure the recurrence of similar attacks, they also help to abridge the duration and violence of one which is present. I shall consider in connection with prophylaxis a few simple, I might say basal facts, the practical observance of which, however, is all-important: 1, Care of the feet ; 2, cold bathing ; 3, friction and shampooing ; 4, clothing and temperature.

3. *Care of the feet.*—They should be kept warm and dry ; for, certainly, there is no more frequent, efficient cause of attacks of acute coryza than cold, damp, or wet feet, and as acute attacks of coryza, when often repeated, lead to chronic rhinitis, and to thickening of the pituitary membrane, one of the primary sources of these latter affections should not be ignored. In order to ward off like troubles, let men, women, and children wear habitually in the streets thick-soled shoes which are sufficiently long and large to give them perfect comfort and permit the toes to move with some freedom. In the autumn and winter months, or indeed at all times when the sidewalks are cold or

wet, it is particularly necessary to pay attention to this rule. Shoes should scarcely ever have thin soles for out-door wear. Even in summer it is indicated to keep the feet from becoming overheated by almost direct contract with the hot pavements, and in order to effect it, thick-soled shoes must be worn. During the cold months of the year, if people who go to evening entertainments are called upon to observe strictly the laws of fashion, their pumps, or other form of light-soled shoe, should be covered with some kind of warm overshoe. When there is no snow, slush, or actual rain upon the ground, *i.e.*, when the pavements are merely damp, the cork-soled shoe is the most recommendable, inasmuch as it prevents the foot from becoming damp or chilled without obliging the wearer to put on rubbers or arctics. When the sidewalks are cold, but dry, a stout pair of double-soled shoes is all that is required. If there is snow upon the pavements, or if it is raining, then it is needful to wear impermeable overshoes. For supposing the feet become wet; immediately the circulation is more or less arrested, and a cold condition of the lower extremities quickly follows. If the feet are cold, the blood in part stagnates in them, in part goes elsewhere in the body to produce local congestion, and in no organ are the ultimate results more certainly effected than in the nose. Under these circumstances uneasiness and tickling of the pituitary membrane are the rule. These phenomena, moreover, are not tardy in showing themselves, but with some predisposed individuals will begin very soon after the feet have become damp or wet. Constantly recurring or persistent congestion of the nose leads sooner or later to various forms of chronic catarrhal inflammation of this organ. The feet should therefore always be, if possible, in a comfortable condition, but if wet for any length of time, through necessity, let it be known that this state is not so hurtful when one is moving about as when at rest. Light woollen socks or stockings are the proper direct covering for the feet in cold months of the year, unless there be some personal idiosyncrasy which makes only thick cotton ones supportable. These should always be changed for others when they are damp, and they never should be sufficiently heavy to occasion local sweating or distress. Overshoes ought to be removed as soon as the wearer enters the house and only be replaced just before leaving it. If this precaution be *not* attended to, the feet are bathed with moisture, and afterward, whenever they are exposed to a sudden lowering of temperature, they are chilled and become the immediate source of an attack of acute coryza.

2. *Cold bathing.*—Cold baths are useful in that they give tone to the whole system, and brace the body to the power of

more active exertion, and they are also a means which, if judiciously employed, will lessen the likelihood of localized mucous congestion. From this latter stand-point they are especially indicated in the prophylaxis of attacks of coryza. By habitual bathing in cold water the functions of the skin are excited, and one is sufficiently protected in many instances against the recurrence of colds. For in our variable climate, where extremes of temperature so closely approximate, every person must be more or less frequently exposed to all the evils which result from draughts, or from cold, or excessive humidity. No matter how numerous our precautions are, people will, in spite of them all, at times take cold. Our object then should be, *not* to surround ourselves with all manner of contrivances by which climateric influences are not exercised, but rather to harden ourselves so that they are not injuriously felt. Now *hot* or even *tepid* bathing is, I believe, one of the main causes of recurring congestion of the nasal fossæ. And can it be otherwise? Take a person of relatively feeble and lymphatic constitution, and subject him to bad hygienic influences, viz., surround him with an insufficient or vitiated supply of air, give him improper food, or cover him with badly adapted clothing, and will you not find that he gradually becomes more markedly strumous and sickly? Warm bathing is to be ranked in the same category. It is enervating and takes away from bodily vigor. The skin, it is true, is actively congested during the period of the bath, and its capillary circulation greatly augmented, but just so soon as the ambient cold air impinges again upon the cutaneous surface, either directly or through the habitual wearing apparel, the blood-supply is driven with increased force (owing to the rapid contraction of the small vessels of the integument) toward the internal viscera and mucous linings, which in their turn become congested, and remain so more or less *constantly*, unless by a superabundance of clothing the body is kept in an unnatural state of heat. If the temperature of the water used in bathing is as low or lower than that of the surrounding atmospheric medium, what a different physiological action takes place! A temporary shock follows immersion or the use of the sponge filled with water, after which there is a short period when the surface temperature of the body is lowered; and then a natural warmth or glow takes place, the skin is reddened, its capillary circulation is heightened, and not merely in a temporary manner, but shortly becomes so permanently, and the interior organs are relieved of an overload of blood and greatly stimulated in their several functions. No healthy individual, therefore, should omit taking in our climate a cold sponge-bath upon rising each morning. The head and neck should be first wet, afterward the arms,

shoulders, and chest, and finally the trunk and the lower limbs. In this way unnecessary shock to the heart is avoided, and water of low temperature (55° – 65° F.) may soon be habitually used. The tub should only be filled to the height of one or two inches. If the water reaches above the ankles the body becomes rapidly chilled. One must become accustomed by degrees to the use of a cold sponge-bath, and in the beginning the water must have the chill taken off, unless it be during the summer months. A moderate warmth (80° F.) is at first most acceptable, while with each successive day the temperature of the bath is lowered a degree or two, until at the expiration of a fortnight, water is used with advantage and even pleasure as it flows from the faucet. As the feelings of the individual are not to be relied upon at all times, the thermometer must be employed to measure temperature accurately. The sponge-bath should only last a very few moments, and then the entire surface of the body should be quickly dried. Of course, it is understood that if the constitution be a delicate one, and the reaction following the bath be slow or uncertain, the temperature of the water should not be rapidly or too considerably lowered. If there be any functional or organic disease of an organ, still greater precautions are to be used, and, in some rare instances, I believe cold baths ought to be wholly interdicted. Of course, under these circumstances the only proper judge of their employment is the family physician.

Friction and shampooing.—If friction by means of a rough Turkish bath-towel or a horse-hair flesh-brush be employed regularly and thoroughly for a few moments just before the bath, good reaction usually follows. In this way the skin is rendered smoother and more supple, capillary circulation is increased, and effete layers of epithelium got entirely rid of, while the mucous membranes show by degrees less tendency to become congested. In the case of delicate women and small children, energetic shampooing (massage) with the fingers of a trained nurse is most useful. The shampooing should be carried on with gentleness at first, but afterward with a firmer pressure and include the entire trunk and limbs. It should always proceed from the extremities toward the heart, or in the direction of the venous blood-flow. The use of some fatty or oleaginous substances of bland, unirritating nature is an excellent adjunct in carrying out the above treatment, and is especially of service where the skin is dry, or offers a slightly scaly or furfuraceous aspect, and so gives evidence of imperfect nutrition, or lack of healthy power. To show the striking results effected, in so far as increase of energy of all vital functions is concerned, I would have only to cite well-known instances of prematurely born children,

in which shampooing alone worked wonders. After a few weeks, these children can be bathed with advantage (in *warm water*), and under the influence of two or three daily shampooings, increase almost visibly in health and strength. In regard to this subject of shampooing (massage) in the case of broken-down females of a specially nervous type, Dr. Weir Mitchell has placed the profession under great obligations for his thorough practical exposition of the subject.* Shampooing, properly speaking, is nothing more than a kneading process, in which each external muscle of the frame is made to react and do its work toward generating heat and building up nerve-force. Little by little the kneading process is done more thoroughly and with a greater degree of force, until, finally, the skin has everywhere augmented vitality. There are, as we know, special men

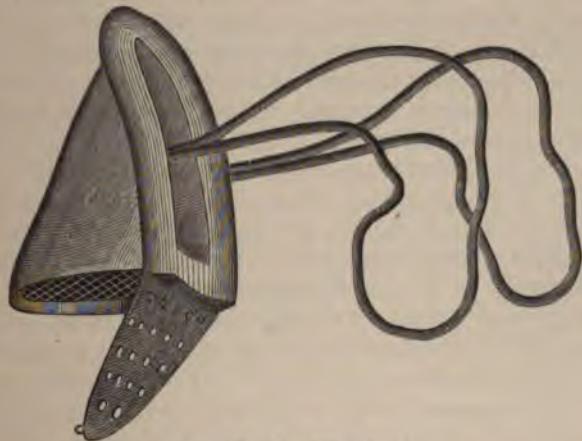


FIG. 55.—Nasal Respirator.

and women in most of our large cities who have become experts in these practical manipulations, and who are known as making daily use of this method of cure. Such a one, when it is feasible, had best be employed.

4. *Clothing and temperature, and hints upon taking cold and avoidance of it.*—It is a preservative of health for almost every one in our variable climate to wear flannel undergarments in winter and summer. These should never, at any season, be heavy enough to occasion visible perspiration. There should be always a change for night wear, so that the garment worn during the day may be thoroughly aired; the one worn at night must usually be of lighter texture than the flannel which is suitable for day wear. The outer clothing should be warm and

* *Fat and Blood, and How to Make Them.* Philadelphia, 1877.

comfortable, but not oppressive. If the feet are kept warm and dry, too much covering of the trunk is not as a rule, tolerable, and can but make an individual susceptible to colds. All mufflers around the throat are absolutely bad. They never prevent colds being taken, and only render the probability of contracting them much greater. During the prevalence of high cold winds, the ears may, with advantage, be protected by means of ear-tabs, or by placing pieces of cotton in the external auditory canals. When in the open air, especially during cold or damp weather, always have the habit of breathing through the nose and keeping the mouth closed. If a patient have an attack of acute coryza or severe *chronic* catarrhal inflammation of the nasal passages, a respirator covering the nose (Fig. 55) can be worn with much advantage out of doors during inclement weather.* Never talk in the open air if the weather be windy or damp and there be already symptoms of an incipient cold. Never under these circumstances stand in a draught, go to the register or fireplace immediately before leaving the house, or remain in the house a moment longer than is necessary with extra wraps over the body. Take a warm drink, if desired, upon entering the house after being exposed to cold or fatigue, but so far as possible make it a rule *not* to do so when obliged to expose one's self to a cold or damp atmosphere shortly after taking it. The temperature of one's sitting-room should be 66° to 68°, and rarely 70° F., never above the latter if the chamber be artificially heated, except in certain cases of illness. In order to prevent the air becoming too dry for health, let a basin, pitcher, or bucketful of fresh, pure water, with the surface exposed to the air, remain constantly in the bed-chamber, particularly if it be warmed with heat from a stove or furnace. Never, however, depend upon heated air from a furnace to warm a parlor, office, or bedroom unless it be unavoidable. Such a source and quality of heat is only tolerable in vestibules, halls, and corridors.

Calorifères or stoves are nearly as unpleasant and injurious as furnaces, for the heat from them irritates and dries up more or less the mucous surfaces of nose and throat, trachea, bronchi, and pulmonary alveoli. Furnace heat, in addition, permits much that is pernicious in the air supply to remain so until brought into direct contact with the lungs and absorbed. And how could it be otherwise? Is not the air that feeds them usually taken from the near level of the street, gutter, sidewalk,

* This instrument can also be employed as a nose inhaler when it is considered advisable. For this purpose there is a perforated box affixed to its lower portion, into which a layer of absorbent wool or of lint can be placed, and on it the medicine to be used is dropped. The apparatus is kept in position by two elastic cords passing round each ear.

and sometimes from damp or filthy cellars, in which decaying, bad-smelling refuse is constantly accumulating? Indeed I have seriously asked myself, on many occasions already, whether one-half the diseases supposed to be due to bad drainage in our houses are not rather occasioned by the conditions just referred to. An open fireplace, with wood or soft coal as fuel, is after all one of the great purifiers and ventilators of all apartments, large or small, in cold weather, and is earnestly recommended for adoption by every one who can have one. *What precedes is important to the well-being of the majority of people; in my opinion it is absolutely essential to the prophylaxis or cure of those affected with catarrhal inflammation of the nasal fossæ.*

III. ACUTE CORYZA.

Definition, synonyms, history.—By this term is designated an acute catarrhal inflammation of the mucous membrane lining the nose and the cavities communicating with it. This mucous membrane is properly called the pituitary, or Schneiderian membrane, and its inflamed state is usually attended with discharges of watery, mucous, or muco-purulent fluid. As synonymous terms with coryza, we have gravido, rhinitis, rhinorrhœa, acute nasal catarrh, or vulgarly "running at the nose" and "cold in the head." The last of these terms remains in common parlance as an historical proof of the error of the older writers on this subject, who believed the products of secretion of the inflamed nasal membrane came down from the cranial cavity. It remained for Schneider (1660) to refute this classical mistake in his famous work, "De Catarrhis." Nevertheless, amongst the ignorant the notion is still popular that nasal mucus is found in the blood of the brain. To us physicians it is to-day universally known that catarrh of the nose resembles similar inflammations elsewhere situated, with only those differences attached to it which arise from special situation and structure.

Pathological anatomy.—According to clinical observations, the lesions of the pituitary membrane are not dissimilar with those of acute catarrh of other mucous surfaces. In regard to post-mortem conditions, it must be obvious that an opportunity is rarely offered to make accurate pathological investigations, and we have no reported statements of such researches. During life, the seat of the hyperæmia is principally the capillary vessels, which have become engorged with blood, and occasion swelling of the mucous membrane. This tumefaction is rapidly increased by œdematous infiltration, and a quantity of colorless, salty, and very thin liquid flows from the nostrils. Later on,

the secreted liquid becomes thicker and opaque, while the haemorrhage and swelling of the membrane diminish. It would appear as if the respiratory region of the nasal fossæ was more particularly affected than the olfactory. In a few rare cases, the exudation in the nasal passages has been of fibrinous nature, somewhat similar in appearance to what takes place in diphtheria. This form has been observed amongst new-born infants and those affected with eruptive fevers.

Symptoms.—The prodromic phenomena which mark the beginning of an attack of acute coryza are general lassitude, or sense of weariness, chilly sensations, and a notable degree of pain or weight in the forehead. The intensity of these general symptoms varies considerably with different individuals. It also depends somewhat upon the causes which have occasioned this disease. Thus the symptoms may all be of mild type and characterize a light variety of malady. Again the general symptoms may be present in an aggravated form, and what is usually an affection of little moment becomes very severe. In these instances the pulse and respiration are both much accelerated, there is a notable rise of temperature, and the patient is confined to the house for several days with an affection of serious import.

Fortunately, this picture is overdrawn in the majority of examples, and the local symptoms are alone especially troublesome, while the general malaise rapidly subsides. In the beginning, the pituitary membrane is dry, stuffy, and there is little or no secretion of mucus in the nasal passages. At the same time there are local sensations of irritation, as of a small foreign body, which excite frequent attacks of sneezing. The fulness of the passages is most uncomfortable, and the efforts at first to blow the nose are wearisome and ineffectual. The dryness of the nasal fossæ in the first stage of acute coryza is variously interpreted. My own belief is that it is due to a temporary suppression of the secretion of the pituitary membrane. This conviction is not shared by those who recognize a perfectly normal condition only when there is no *mucus* upon the Schneiderian membrane, and when the humid condition of the nasal passages is produced by the water of the expired breath. In a brief lapse of time an increase of nasal secretion commences. This soon becomes copious in quantity, and at first is watery in appearance. Later on it possesses a saline taste and irritative qualities, possibly due to the ammonia it contains. It is continually dripping from the nostrils, or occasions an attack of sneezing, followed by blowing the nose, which relieves the congested and swollen membrane for a few moments. But this relief is very temporary and the fulness of the head and diffi-

cult, obstructed nasal respiration rapidly return. The watery fluid which at first comes from the nose originates almost entirely in the moisture of the expired breath which is not taken up by the absorbents, but simply penetrates the mucous membrane until it is saturated, and when exosmosis begins constitutes the initial discharge. Afterward, when this fluid supply is exhausted, the discharge comes mainly from the contents of the blood-vessels. At a more advanced stage of the disease, the discharge from the nose contains mucus, and is thicker and less transparent. Little by little epithelial cells and white blood-corpuscles are mixed with the mucus, and the discharge is opaque, tenacious, and assumes a yellowish or greenish coloration. Over the corpuscles considerable numbers of micrococci are observed, and it is to their presence that Hueter notably attributes the irritation present in coryza.

The mucus secreted in coryza probably comes from the entire mucous membrane and does not originate in the glands, as was at one time believed. A strong reason for this belief lies in the fact that the secretion from the nasal lobulated glands does not give the characteristic reaction of mucus with acetic acid. No doubt, therefore, that the mucus itself is but the result of degenerative changes in the effete epithelia which have been pushed off by the liquid current from the overcharged blood-vessels. Besides the elements mentioned, the nasal discharges may contain different organic or inorganic particles from the surrounding atmosphere, drawn in during inspiration. Taken together these substances form a greater or less abundance of material which bathes, as it were, the nasal passages, and which gives rise to those moist, snuffling sounds, that are so significant of the presence of coryza.

The secretions from the nasal passages are at first almost devoid of odor, but later become slightly nauseous, and at times positively fetid, when they have been pent up in the nasal passages during several successive hours. When the attack is almost terminated, hard crusts may form within the nostrils, either on the septum or turbinated bones, and are with difficulty expelled by blowing the nose. In certain instances it is found necessary to extract them by the finger, or suitable forceps. The swelling of the mucous membrane varies in degree, as does the amount of mucous or muco-purulent discharge. Sometimes the nasal passages are merely narrowed ; frequently they are entirely occluded, except after an attack of sneezing. The peculiar erectile stroma with large venous cavities, situated between the periosteum and the pituitary membrane covering the turbinated bones, explains satisfactorily this considerable degree of tumefaction. Moreover, as Kohlrausch (1853) and later on

Bigelow (1875) have demonstrated, it permits us to understand the great rapidity with which turgescence or collapse of membrane is produced; and why it is that gravitation in certain positions of the body, as lying on the side, will cause complete obstruction of the portion of the nasal passages situated undermost. Owing to the juxtaposition of the opposite surfaces of the nasal mucous membrane, the column of inspired air does not reach freely the olfactory membrane, even during a strong effort, and the consequence is that the sense of smell is partially lost for the while. In bad attacks, and when the nasal fossæ are normally very narrow, I have known instances of complete loss of smell during several days. This condition is accompanied, as one would naturally infer, by obtuseness of the gustatory sense, in so far as it depends upon the olfactory. Many such patients affirm that their meat or drink has absolutely no flavor, and cannot always accurately differentiate even pungent sapid substances.

The voice assumes a nasal intonation, which is commonly understood to be occasioned by talking through the nose. This is not correct, but the contrary is true; viz., the return column of air is prevented from passing into and through the nasal fossæ, owing to obstruction caused by their swollen condition, and consequently the normal vibration is not given to the articulation of most syllables.

Complications.—Owing to repeated blowing of the nose and to the continual passage of irritating secretions, the skin of the nares and the upper lip becomes red and swollen, and the pain and discomfort are augmented. The catarrhal inflammation is also apt to extend in different directions and implicate the ducts and sinuses communicating with the nasal passages, properly speaking. Thus the ethmoid and sphenoid cavities are frequently involved, and increase of headache is produced. If the pain is more marked at the root of the nose, it signifies extension of the catarrh to the frontal sinus; if the malar region is specially sensitive, we are prone to believe that the antrum of Highmore has become inflamed.

In connection with this point we should call to mind the fact that the fifth pair of cranial nerves sends many terminal filaments to the pituitary membrane, and trigeminal neuralgia, in a mild form, is a frequent complication of acute coryza. Search should be made, therefore, for painful superficial points where the nerve passes out from the infra-orbital foramen and along its lines of distribution, before making a diagnosis. It is not infrequent to find the inflammatory processes extending through the lachrymal ducts to the lachrymal sac, and finally causing redness and pain of the conjunctivæ. Epiphora and irritation

of the lower eyelids are occasionally produced by blocking up of the tear-passages. If the Eustachian tubes become affected, temporary deafness is produced, with noises in the ears and more or less unpleasant sensation in the auditory canals. Nothing is more common in severe cases of acute coryza than to observe the progress of the inflammatory process into the pharynx through the post-nasal space, and from thence into the larynx and large divisions of the bronchi. In these examples we have a sort of general influenza, which lacks only the strongly marked epidemic characters of this disease to be confounded with it in nearly every particular.

The fever, which, as I have said previously, is usually slight, may in such cases become high and occasion solicitude. Accompanying it we shall have, also, that general feeling of a disability to do anything, with soreness of the muscles and rigidity of the joints, which marks the influence of cold upon all the soft tissues. Notable swelling of the lymphatic glands under or behind the sterno-cleido-mastoid muscles, as a direct complication of acute coryza, must be very infrequent. It is mentioned, however, by German writers, and should be sought after, especially in scrofulous subjects.

Duration and termination.—An ordinary attack of acute coryza does not usually last more than three or four days. In exceptional cases it may last a week or more. What is more frequent is to see persons in whom several acute attacks follow each other in close succession. In these instances there is a special predisposition to colds by reason of some constitutional tendency, or the individual has been exposed to a succession of draughts or rapid changes of temperature. It should be observed, that those individuals, who have acquired a certain habit, apparently catch cold under the influence of the most trivial causes, which would not affect at all people of ordinary susceptibility to ambient atmospheric conditions. Frequently, among such persons, are found those who are either broken down in health, or who inherit a markedly lymphatic constitution, or those who, even during the initial stage of an attack of coryza, do not take either the most ordinary precautions against exposure, or adopt any treatment, even the most simple. After months or years, some of these patients will develop a continuous coryza, and are scarcely ever free from an increased amount of secretion in the nasal passages.

The consequences of this condition will be spoken of in my description of chronic coryza. The ordinary termination, however, of acute coryza in a healthy person is recovery, and when the attack has passed, no unpleasant sequelæ follow. In very rare instances acute coryza terminates in suppuration. Fatal

cases have alone been recorded among nurslings or very old people, owing to excessive interference, through blocking up of the nasal fossæ, with respiration and nutrition.

Etiology.—Of all mucous surfaces, the pituitary is perhaps the one which is most sensitive to atmospheric changes. Let the air rapidly become somewhat damp and cold from warm and dry, and there are many persons who will be taken with cold in the head. Such are those, particularly, whose skins act imperfectly, or who have a rheumatic tendency, or who, for one reason or another, are enfeebled in health. Again, with the majority of healthy people, exposure to a draught or the sudden chilling of a large or small portion of the cutaneous surface, especially of the extremities when the body is perspiring, is apt to bring on an attack of acute coryza. It is a remarkable fact that acute coryza may be occasioned by the action of an overheated or confined and impure atmosphere. And thus we have an explanation of its frequency among those who live in badly ventilated apartments heated by means of furnaces. Attacks of acute coryza, of obstinate character, are directly due to inhalation of irritating vapors and gases, of dusts and different kinds of powders. Those who work in factories, chemists, pharmacists, tobacconists, etc., are especially exposed to these efficient causes of the disease. Among those who have a particular idiosyncrasy in regard to these injurious inhalations, an attack of asthma is sometimes produced. In these cases Rousseau has remarked, and I believe with good reason, the close relationship existing between asthma and coryza. There are indeed instances in which the *commencement* of the asthmatic attack is marked by the symptoms of coryza, and occasionally paroxysmal sneezing constitutes the chief diagnostic feature of them. In my own experience I have had occasion to notice the decided predisposition of tobacconists to acute coryza, and have found their attacks unusually prolonged and difficult of cure. The great sensitiveness of most people to the vapor of iodine is well known, and few can breathe it without having decided irritation of the nasal mucous membrane. In exceptional instances, the same causes which are accountable for follicular disease of the pharynx may also cause repeated attacks of acute coryza.

Acute coryza may be encountered among the initial affections which point to the development of an acute general disease of epidemic nature, influenza, measles, etc. And under these circumstances the coryza is without doubt contagious, just as the disease of which it forms an integral part is. When it exists, however, as a sporadic affection, without being followed by ulterior symptoms, is it then contagious? Many familiar facts indicate the probability of its being so. Persons in the same

family are often attacked by it successively, not simultaneously, and when no other sufficient reason can be assigned for its presence. The use of the same handkerchief, the contact of faces, as in kissing, has been known to communicate it. Fraenkel cites the case of bridegrooms who have taken it from their brides. There are, besides, two facts which show its possibility, and on this account should be mentioned. The first is the transmission of gonorrhœal virus to the nasal membrane ; the second, the coryza taken by children during delivery, and which is obviously occasioned by the contact of irritating fluids which come from the mother's exterior genitals. Inasmuch as these two fluids are not believed at the present time to be of specific nature, there is no evidence to prove that they are more likely to carry contagion than the secretions from surfaces affected with a catarrhal inflammation. We know, however, that catarrhal secretions from mucous surfaces other than the pituitary, especially at the purulent stage, are contagious, and it is also certain, that they do not differ in a marked degree from the discharges from the nasal passages. The conclusions seem almost forced, therefore, that the products of catarrhal inflammation of the Schneiderian membrane are contagious. And yet the power of the "contagium" must either vary in accordance with the stages of the disease, or the susceptibility of different persons to its influence must be very different, under various conditions of health, or of ambient atmosphere : for, hitherto, all attempts at inoculation have signally failed. Numerous experiments have already been tried so as to convey an acute coryza directly from a patient to a perfectly healthy individual, by placing morbid products of secretion upon, or introducing them into pituitary membranes wholly unaffected. In no instance have the attempts been crowned with success, although they were made *apparently* under the most favorable circumstances.

Such results, however, are far from conclusive in view of the other facts which precede, and will doubtless remain so until the analysis of the air, at particular times, shall make manifest the real noxa of this as of many other acute diseases. It is well known to aurists and oculists that there is an evident relationship between many conditions, physiological and pathological, of the generative apparatus and certain affections of the ear and eye. Dr. John H. Mackenzie* has also clearly shown that sexual irritation normal in character, and such as may be found in coitus or menstruation, is capable, in many men and women, of producing local conditions of nasal irritation and congestion. In pathological conditions of the womb or penis, or in instances where the generative apparatus has been overstimulated by ex-

* American Journal of the Medical Sciences, April, 1884.

cessive venery, or masturbation, there is frequently present a swollen state of the turbinated structures. This occlusion may be only temporary, or it may in time become permanent, and real hypertrophic nasal catarrh may result. Occasionally, the obstruction may merely occasion difficulty of nasal respiration ; at times, however, it is accompanied by repeated sneezing. Thus it is shown that undue excitation or disease of certain parts of the organs of reproduction may be the predisposing or efficient factors of nasal congestion and inflammation. These consequences may be brought about either by reflex action, pure and simple, or may be explicable through the correlation which exists between similar vascular and erectile areas in different portions of the body.

IV. VARIETIES OF ACUTE CORYZA.

(a.) *Simple coryza of infancy.*—In very young infants affected with this disease, symptoms are present which do not exist in older persons. These originate from the narrowness of their nasal fossæ, and from their manner of taking nourishment. So soon as these passages are at all inflamed, they become rapidly almost impervious to air. The result is, the infant holds its mouth open and its breathing is noisy and difficult. This is not all ; for if the infant attempt to take the breast, it will suck for a few moments and then relax its hold, and commence to cry and show other symptoms of anger or distress.

The reason is apparent, viz., the mouth being closed during the effort of suction, it has no way by which it can breathe. If the attack of coryza is not rapidly ameliorated, the infant loses flesh and strength, and in occasional instances the prognosis has been grave. The presence of distressing symptoms, and the possibility of a serious result, should make us careful to adopt proper therapeutical measures and to give attention to the method of the child's alimentation.

(b.) *Specific coryza of infancy.*—An attack of acute coryza in infants is frequently due to the poison of syphilis. Such cases in the beginning resemble entirely the simple acute form, and it would be erroneous to believe that *signs are always present* which reveal their true nature. In fact, the negative results obtained with anticitarrhal treatment will alone at times make us suspicious. If we then make use of mercurials, we shall recognize, after a brief period, notable beneficial effects. Careful attention, therefore, is particularly necessary in like instances.

(c.) *Coryza of fevers.*—Acute coryza is usually present in the initial stage of measles, exanthematous typhus, and influenza. In other infectious diseases it is relatively infrequent.

Diphtheritic coryza and the coryza of glanders, although acute,

are for obvious reasons not considered in this work. All practitioners are familiar with an acute coryza which is frequently occasioned by the internal use of iodide of potash. Attacks of similar inflammation are occasioned by other mineral poisons.

Treatment.—The proper treatment of an acute attack of coryza of the simple variety in an adult will depend upon the stage at which it has arrived and upon the presence or absence of symptoms of constitutional reaction. But before speaking of the *abortive* and *curative* treatment, it is timely to refer to the prophylaxis of this affection. In a general way I would here refer my readers to the counsel given at pages 41-47 of this work. But particular attention should, also, be directed to special facts which are true of attacks of acute coryza in different individuals. While one person will take a cold in the head from slight exposure to variations of heat, cold, and moisture, other persons will resist all these agencies, usually productive of acute coryza, with great impunity. Certain individuals get their attacks of coryza when they have been exposed to the inhalation of dusts, noxious vapors, or an ill-ventilated atmosphere. I have known the mucous lining of the nose to become congested and cold in the head to be contracted in a room heated by a furnace, in which there was no perceptible draught and the temperature was elevated and nearly constant. At times acute coryza attacks those who are merely overworked, or prevented from taking sufficient rest at night. Each one can carefully sift the many and often quite singular efficient causes of an attack of acute coryza. All of those found to be thus influential in producing bad effects are to be rigorously avoided, as well as the more ordinary and well-known causes, such as wet and cold feet, draughts of air, prolonged exposure with insufficient clothing, going out of doors without a covering for the head, etc.

Abortive treatment.—I know of none that can always be relied upon. The one which has in my experience proved the most trustworthy is the following: Whenever an adult is conscious of having taken a cold in the head, as indicated by the first uncomfortable sensations in the nasal passages, followed by one or more efforts of sneezing, let him commence to take one or other of the accompanying prescriptions regularly.

1. B. Sp. ammoniæ aromat. 3 iss.
S.—One teaspoonful in sweetened water (3 i.-3 iss.) every two hours.
2. B. Ammonii carb.,
Liq. morphiæ sulph. (U. S.) aa 3 i.
Mist. amygdalæ ad 3 iiij.
- M. S.—A teaspoonful in water (3 i.-3 iss.) every hour during six hours and afterward every hour and a half.

For the morphine in the last prescription small doses of the tincture of aconite root may be substituted, with good effects, whenever there are evident febrile symptoms coming on, and the pulse is full and strong. From one-eighth to one-fourth of a drop to each dose of the above mixture is the proper amount to be given. According to Phillips ("Materia Medica," New York, 1879, p. 156), a few drops of the tincture of *Euphrasia officinalis* (eye-bright) taken at the beginning of an attack of acute coryza, and repeated every two or three hours, will often abort it. This he knows "by personal experience." The tincture should be taken in a wineglass of water. In the way of local applications to the inflamed mucous lining, I know of nothing more recommendable than the following formula :

- R. Pulv. fol. belladonnæ..... gr. xx.
 Pulv. morphiae sulph..... gr. ij.
 Pulv. gum acaciæ..... ad $\frac{5}{3}$ ss.
 M. S.—Use with the powder-blowers for anterior and posterior nares.

This powder should be blown through the nose both anteriorly and posteriorly, so as to coat over the mucous membrane lining the nasal passages, very thoroughly. It causes little or no irritation, and in fact soothes the membrane evidently in many instances. Its most noticeable action, however, is to diminish the hyperæmiated or congested condition of the interior of the nose, so as to permit freer passage of the inspired and expired current of air. This it does, doubtless, by contracting the small blood-vessels and lessening the amount of watery fluid which exudes from them into the cellular structure. Besides, all three agents, belladonna, morphine, and gum, are decidedly antiphlogistic in their action upon the inflamed pituitary. The use of this powder I owe to the teaching of Gueneau de Mussy, of Paris, as I do that of the carbonate of ammonia mixture to Dobell, of London. The powder-blowers here referred to (Figs. 40 and 41) are those which will be found most serviceable by the general practitioner, and in those numerous instances in which the specialist takes charge of his patient at his own home and not at the physician's office.

For the use of my hard rubber powder-blowers (Fig. 43) attached to Sass' condenser, I refer to the page where this treatment of post-nasal catarrh is described. In those instances in which the attack of acute coryza has become thoroughly established, I have not found thus far any remedy which can arrest its progress, and we are then obliged to adopt

Curative treatment.—If the attack of coryza be accompanied,

as it sometimes is, with some febrile reaction accompanying or following upon chilly or creepy sensations and a general condition of malaise, the time-honored treatment of a full dose of some opiate at bed-time, followed by a tolerably active purge in the morning, is reliable as a method of partial relief from the distressing symptoms. Abundant diaphoresis is thus produced, and an active flux from the bowels, both of which relieve, in a measure, the congested and swollen pituitary membrane. In my own experience, however, I have found it preferable in these instances to give the first night a full dose of some simple diuretic or diaphoretic medicine which acts upon the skin or kidneys, but is not followed by almost absolute loss of appetite and great dulness of intellect the next morning.

The formula recommended is :

- B. Liq. ammonii acetatis..... $\frac{2}{3}$ ss. - $\frac{2}{3}$ i.
Sp. aetheris nitros 3 ss. - 3 i.
M. S.—To be taken in a tumbler of water at bed-time.

The patient should cover himself with one or more blankets according to the season, and so as to feel warm enough to promote active perspiration. Toward morning and before rising, the extra covering should be removed, and the patient allow himself to cool slowly. Once out of bed he should dress rapidly, and it is of course essential, if it be winter-time, that the room be artificially warmed by an open fire. The following day the ammonia mixture already mentioned may be taken with decided advantage, or the following formula :

- B. Potass. citratis,
Syrupi ipecac.,
Tinct. opii camph..... $\frac{2}{3}$ ij.
Syrupi acaciae $\frac{2}{3}$ i.
Aquæ ad $\frac{2}{3}$ iiij.
M. S.—A teaspoonful every hour and a half or two hours.

It is necessary to remain in the house for at least twenty-four hours, especially if the weather be at all cold, damp, or windy. If, on the contrary, it be warm and pleasant, a short brisk walk in the sun may afford sensible relief to the swollen pituitary membrane. Whenever the diuretic mixture has not made the patient feel better the following morning, and there is still fever, some cough, and the patient can determine to be quiet in bed during the forenoon, it is advisable to take an active purge. The neutral salts are here particularly efficient, and we may

give them in their natural combinations, such as they are found in Pullna, Hunyàdi János, or Friedrichshalle waters, of each of which a tumblerful or more may be taken in the early morning, according to their varying strength, and to the facility with which the bowels of each one are affected. As a substitute for these waters, the following formula is serviceable :

B.	Magnesii sulph	$\frac{3}{4}$ ss. - $\frac{3}{2}$ i.
	Magnesii carb.	$\frac{3}{4}$ ss.
	Syrupi limonis.	$\frac{3}{4}$ ss.
	Aq. menth. piperitæ.	ad $\frac{3}{4}$ ij.
M.	S.—To be taken as a dose.*	

Amongst local applications the following are useful : externally over the bridge of the nose the application of some fatty or other emollient substance, such as cold cream, suet, sweet oil, or vaseline.

Internally, as a local application to the mucous membrane itself, the same substances may be applied by means of a camel's-hair brush (and of these vaseline is the best), or Ferrier's powder, of which the formula is here given, may be thrown into the anterior nares several times a day, from the powder-blowers already described (Fig. 40).

Ferrier's Snuff.

B.	Morph. sulphatis.	gr. i.
	Bismuthi subnitratis	3 iiij.
	Pulv. acaciae	3 i.
M.	S.—Use by insufflation.	

This powder has not in my practice effected what it has done in Dr. Ferrier's, viz., abort an attack of acute coryza. Nevertheless, it is a mild, slightly astringent, and soothing application to the inflamed membrane, and as such I recommend it. Dr. Ferrier, it is true, advises his patients to make use of it every hour during twenty-four successive hours, and to do this faithfully may possibly be the necessary price of a rapid and effectual cure before the coryza has become master of the situation.

But few patients, I believe, have that faith or laudable obstinacy which will make them fully carry out his directions, and the great difficulty in the employment of this simple remedy, as in fact of all others, for the rapid effectual cure of a cold in the

* If a pill be preferred, two triplex pills according to the formula of the late Dr. Francia, or three compound cathartic pills of our *Pharmacopœia*, are suitable preparations to be given.

head, consists in the scepticism of individuals who, *not believing absolutely* in an abortive plan, consider that this affection must, to a great degree, be permitted to run its usual course, or who, on the other hand, will persist in affirming that the remedies are worse than the disease. Before leaving this subject, I feel the obligation of referring to a certain number of remedies, which have become almost household panaceas for the relief of a cold in the head, or else have captivated certain sanguine members of our profession, who have extolled immeasurably their specific and wonderful action. Among the former I would mention, steaming the head and a hot mustard foot-bath. The former is sometimes useful in its effects, but is an extremely unpleasant operation to go through with ; the latter is a good adjunct of any method of treatment, and will somewhat relieve the engorged mucous lining, and promote more active elimination of water through the integument. Ten drops of spirits of camphor upon a small lump of sugar, taken internally and repeated every fifteen or twenty minutes until several doses are taken, is occasionally useful and relieves the distressing obstruction of the nasal passages for a time. In the same way, inspiring the vapor occasionally from spirits of hartshorn, or ordinary smelling-salts, or tincture of iodine, or even the spirits of camphor itself, will relieve the patient for a short time. The smelling-salts are particularly useful in arresting the tendency to sneeze, if applied to the nostrils immediately upon the first desire to do so. All these remedies act in nearly the same manner : they produce some irritation of the pituitary at first, and upon this irritation being sensibly felt, the mucous membrane exudes a large quantity of watery fluid, which of course makes the passage-way through the nasal passages more open and freer for the while. But the after-effects are often more prejudicial than useful, for if any one of them be employed too great a length of time, it occasions slight additional irritation which only causes the mucous membrane to become more swollen than previously. Glycerine has been topically applied to the interior of the nose, by means of a camel's-hair brush, with the hope that it would afford much benefit to the patient. This it is thought it would do on account of its supposed healing properties, and also because of its well-known strong affinity for water.

Unfortunately, much of the commercial glycerine is impure, contains a slight quantity of sulphuric acid, owing to imperfect methods of manufacture, and when employed in its undiluted strength, as a local application to sensitive parts, causes considerable pain, and is certainly a remedy of little or no value against acute coryza. The remedy of "Brand," of Vienna, is no more worthy of confidence than those which precede, but as

it has been extensively quoted in contemporary medical periodicals it may be here cited :

- B. Acidi carbolici,
 Liq. ammonii fort fl. 3 v.
 Alcoholis fl. 5 ij.
 M. Keep in a dark place, or a tinted glass bottle.

A few drops of this remedy should be poured on a small cone made of blotting-paper, and the vapor inhaled so long as it rises. Its use may be repeated, if found beneficial, every two or three hours. The eyes should be kept shut, for fear lest the irritating vapors from this mixture might cause the tears to flow. Respiration of camphor,* coarsely powdered, and placed in a jug of boiling water, has been recommended as an effective method of treating an attack of coryza. About one drachm of camphor should be added to half a pint of fluid, and the steam thus impregnated should be inhaled slowly ten minutes every hour, repeating it three or four times, when the nasal inflammation will be much relieved. The jug containing the water, as well as the face of the patient, must be surrounded by a paper cone, during the period of inhalation.

Many persons have great confidence in the internal employment of a full dose of the sulphate of quinine in arresting an attack of coryza, or at all events of lessening its unpleasant features and diminishing its duration. Undoubtedly, at times it is useful, and in most cases is free from ill effects. It acts most probably by contracting the small vessels of the nose, and thus makes the passages freer. In malarial cases, it may have some specific effect against the attack itself, which would appear then to be dependent in a great measure upon miasmatic poisoning. Whenever there is concomitant disease of the middle ear, with some or great impairment of audition, I would advise strongly against the use of quinine internally.

Dr. D. B. St. John Roosa has shown manifestly to all those who believe in his skill and accuracy of observation that the sulphate of quinine congests the membranæ tympani in these cases, and carries further injurious effects to an already diseased organ. Arsenic is then the proper remedy to employ, and I have reason to believe that five to ten drops of the liq. potass. arsenitis in water, repeated every eight hours, for two or three doses, may do much good to an incipient malarial cold of the head. The tincture of nux vomica—another remedy first vaunted by the homœopaths in the treatment of coryza—I have not found

* *Lancet*, May 31, 1884.

of the slightest use in the acute form of this disease. If the sulphate of quinine causes dizziness, noises in the head, or tinnitus aurium, this difficulty may be successfully obviated by the addition to each dose of 3 ss. of Fothergill's solution of hydrobromic acid, or by substituting for it an equal dose of the now fashionable dextro-quinine. Cinchondia has not the same effects, and further is apt to occasion nausea and much stomachal distress.

Many writers advise the use of the vapor or hot-air bath as an efficient means of treating acute coryza and other colds in their incipient stage. Of the two, I would prefer the Russian bath, because the steam itself has a local emollient effect upon the inflamed pituitary. But I must enter my protest against its general use. Indiscriminate employment of a remedy of this kind for a cold in the head is more productive of injurious than of good results. Doubtless, if a patient goes to the Russian or Turkish bath at the time of day when there are few or no bathers, and is attended to just so soon as he feels he has been subjected to the heated vapor, or dry air, a sufficient length of time, he may and does at times derive benefit from it. But frequently one is obliged to wait beyond this time of advantage in the hot rooms. The shampooing is imperfectly and hurriedly done, and the patient is unable to remain well covered up a sufficient length of time in the cooling-room to obviate all danger of catching a fresh cold when he goes again into the open air.

Moreover, is it altogether rational, when one takes cold during the inclement period of the year, to go from such an experience as one such bath gives into the cold, damp, or windy atmosphere outside? In order to avoid probable and greater trouble, one should at least place over the nose and mouth a respirator, and cover one's self with an additional or heavier coat, before leaving the bathing establishment, and then walk rapidly home, not again to leave a warm room for at least several hours. If the vapor or hot-air bath could be taken conveniently in one's own house, it would of course be free from the drawback just mentioned, and when it can, it should be there given. A word still of counsel, as this habit of steam and hot-air bathing has entered so much into the men of the world's treatment of cold in the head. Let men past forty years of age be fully aware that they are as old usually as are their arteries, and if they have lived freely and drunk their sherry and champagne almost every day at dinner for many years, their arteries are as likely as not to have undergone atheromatous changes. If now they take Russian or Turkish baths, they are exposing themselves to great risks, simply because undue tension is caused in the cerebral circulation, especially upon first entering the hot room, and be-

fore the skin perspires and the internal pressure upon vascular walls, situated elsewhere, has time to equalize and accommodate itself. With some persons this period undoubtedly lasts longer and is therefore more prejudicial than with others, because their skin does not perspire so soon nor ever as freely. To these especially I give the warning to stay away from these baths. If any one takes the *hot-air* bath whose skin does not act easily I would recommend that he should be anointed with some oleaginous substance before entering. This practice will cause him to perspire sooner and more profusely. Why it facilitates this function of the skin I do not know, but of the fact I have had cognizance on several occasions, notably in my treatment of Bright's disease of the kidneys.

In the treatment of the acute coryza of infants at the breast I have several times found the greatest satisfaction from the use of powders thrown into their nasal passages anteriorly, by means of the powder-blower. Finely powdered white sugar may be employed, as recommended by Brown-Séquard, or equal parts of finely pulverized white sugar and camphor, as it has been made known to the readers of the *New York Medical Journal* by Dr. E. C. Mann, of New York. I have rendered the powder of Dr. Mann still more efficient by the addition of powdered tannin, in the proportion of grs. xl. to 3*i.* to one ounce of the mixture of camphor and sugar. One or two applications of this powder will enable an infant who before could not sleep at all, owing to the distress of breathing, to sleep almost quietly and without so much choking, due to the mucus falling back from the nasal passages into the throat, while in the recumbent position. Another very great advantage to be gained by a thorough application of this powder is the power which it gives to the infant by opening its nasal passages to suck its mother's breast, or take the feeding-bottle without being obliged to let go its hold with a distressing cry every few minutes. To judge of the value of this method of treatment, it should be tried, and I am convinced it will then become habitual among practitioners. I agree entirely with Dr. Goodwillie in the following statement, and have long held and sustained it, at least in part, as my own view of the advantages derived from the employment of powders in the local medication of nasal catarrhal affections: "These powders when impalpable," writes the authority cited, "and with the therapeutic integrity of the drugs preserved, can be more effectually applied to the nasal passages than spray, and their good effect is certainly more prolonged." Further, as he states, to the general practitioner they are far more convenient than sprays, and, I may add, more cleanly as regards one's surroundings. The use of ointments or glycerites applied with a camel's-

hair brush is not nearly so efficient as the employment of powders, because they do not reach all the parts involved in the inflammatory processes, and only render a very incomplete service. If there be present a syphilitic taint, the "snuffles" will continue in spite of local or general treatment, and so soon as we have reason to suspect its existence, small doses of hydrarg. cum cretâ (grs. ij.-iij.), or according to the age of the child, given daily for several days or weeks, are to be insisted upon. If iodide of potash be given, it should be in extremely small doses, certainly not more than $\frac{1}{2}$ to $\frac{1}{4}$ gr. three times in the twenty-four hours. It should be combined with small doses of bichloride of mercury (gr. $\frac{1}{15}$), or given with a few drops of Hoffmann's antisyphilitic in a little syrup of orange and water.

So reliable an observer as J. Solis Cohen, of Philadelphia, speaks in the following manner of the use of chloroform by inhalation to abort an attack of acute coryza: "The inhalation of chloroform to the induction of anæsthesia, administered after the patient has been put into bed, will often be found adequate to abort a cold by its relaxing influence upon the structures which are in a state of tension." Dr. Cohen wisely draws attention, however, to the responsibility of the physician in prescribing this remedy, which is in some respects dangerous and should only be employed "in skilful and careful hands." If the upper lip becomes abraded from the constant contact of acrid discharges, it may be anointed with vaseline. Linen handkerchiefs must take the place of those in cotton or silk, and even these ought to be changed frequently, during the march of the disease. If one is compelled to go into the open air when it is cold, during an attack of coryza, it is wise to protect the ears by some outer covering, as it prevents, in a certain degree, the coryza from extending itself into the pharynx, and still further along the respiratory tract.

V.—CHRONIC CORYZA.

By chronic coryza of the simple variety I understand the chronic inflammation of the mucous membrane lining the nasal passages as far back as the posterior border of the nasal septum, which is accompanied with an increase or diminution of the products of secretion, and with some alteration of their physical characters. This inflammatory condition is not accompanied with ulcerations, and it is the absence of *ulcerations* in which I find the main distinguishing feature between it and so-called fetid or *ulcerous* coryza. It may or may not be accompanied with a certain amount of hypertrophy of the mucous membrane and submucous layer covering the turbinated bones. When the infiltration is slight, it gives rise to no very well-marked symp-

toms of stoppage in nasal respiration ; when it is considerable, we have the symptoms from obstruction which principally characterized the so-called hypertrophy of the turbinated bones, to the consideration of which affection I shall devote a separate chapter.

Of many synonymous expressions, such as chronic nasal catarrh, chronic rhinorrhœa, coryza chronica, etc., I prefer the term employed above.

Etiology.—Chronic coryza may be the evident and direct consequence of repeated attacks of acute coryza, in an individual otherwise in perfect health. Frequently, however, it becomes manifest by degrees, is slow but sure in its progressive stage, and is not apparently occasioned by previous attacks of acute coryza. Whenever there is such relationship between it and the acute form, it is specially observed among persons who have persistently neglected ordinary care and treatment in bringing the acute affection to a rapid and favorable termination. It is undoubtedly an affection which attacks children with extreme facility, and among the children of the poor is brought on by inattention to simple sanitary rules and imperfect nutrition. With them it is by no means necessarily dependent upon a constitutional taint of syphilis or scrofula, as is often wrongly inferred. While this statement is true, I do not wish to ignore the fact that these blood-poisons are at times an efficient cause of many of the symptoms observed. Among adults, diathetic conditions should not be lost sight of, and the patient's history, after careful inquiry, will often reveal the presence of syphilis or struma, or what is quite as frequent, herpetism.

Certain accidental causes may lead to the production of chronic coryza, if often repeated. In this category I place damp or wet feet, in connection with which perspiration is suppressed. Trades in which irritating vapors or dusts are breathed more or less constantly are an efficient cause of chronic coryza ; such are in my experience those of carpenter, tobacconist, workers in carpet factories, woollen factories, machine-shops and chemical works, etc. In these latter the breathing of ammonia and other irritating vapors is the determining cause. Chronic coryza has been caused, it is said, by the reflex irritation from a decayed tooth ; by evulsion of the affected tooth the coryza was cured.

Pathological anatomy.—When an examination is made of the pituitary membrane by means of the rhinoscope, we ordinarily recognize that the nasal passages are red, angry looking, slightly humid, and somewhat swollen ; sometimes, however, they are paler than usual, with a dry aspect, and permit, by

reason of a previous atrophic process, a more thorough exploration of these passages than in a normal state. At times the membrane covering the septum and turbinate bones is decidedly granular or velvety. The redness, which is occasionally very deep in color, is not always so; nor is it always uniformly distributed. It may be limited in particular areas and parts, and in the immediate vicinity may, to a very rigid examination with the naked eye, seem perfectly healthy.

Upon expansion of the alæ by a nasal speculum, we frequently cause blood to ooze from the inflamed membrane. The special point from which this blood starts is about the middle portion of the line of junction of the cartilaginous with the bony septum of the nose. There we can often see an excoriated appearance of the mucous membrane which is due to a habit on the part of the patient of scratching this surface with his finger-nail, in order to detach any crusts of mucus which have been deposited there. *In more than one instance I have seen perforation of the nasal septum thus produced.* In a few rare cases, however, there are very visible, though superficial, erosions of the pituitary membrane situated about the orifices of the glands, both upon the septum and the turbinate bones, and these are evidently a consequence of prolonged catarrhal inflammation; possibly, if our means of examination were improved, many such erosions would frequently be found in certain hidden folds of the membrane over deep-seated portions of the nasal fossæ.

The bleeding from the abraded surface is usually slight, and stops a few moments after the speculum is withdrawn. On a few occasions I have known it to be the source of very obstinate nasal hemorrhages. If we use the probe upon the nasal mucous membrane in its atrophic state, we shall find it indurated. If the membrane be turgescent and infiltrated, the application of the probe to different points gives an elastic and rather soft sensation. The latter condition is usually more marked upon the inferior turbinate bones than elsewhere. While the mucous membrane of the alæ of the nostrils is at times much thickened and becomes rather prominent, so as to occlude the nostrils notably, I have rarely met a case in which confusion could arise as to its nature, if a careful examination of the parts be made. The confusion between this appearance and that of morbid growths which has been made by some observers, should rarely if ever occur. In fact, I do not remember to have seen any warty or polypoid growths, either in this region or on the floor of the nasal fossæ posteriorly, as have been reported by good authorities. What we do see, as a frequent accompaniment of chronic nasal catarrh in children, is an eczematous eruption of the nares.

At an advanced stage of this affection, these orifices are almost or entirely closed with thick crusts, so that the little sufferer has to keep its mouth open in order to breathe.

In its simple form, chronic coryza is not accompanied with ulcerations. Of course, in a syphilitic or strumous patient, ulceration may be found, but in these instances the diagnosis should be that of *ulcerous coryza*. The products of secretion are at first fluid, of mucous or muco-purulent nature. A portion of them is blown from the nose each time the handkerchief is used. A certain amount of this secretion collects in the median and upper portions of the nasal passages, does not readily come away when the nose is blown, and gradually hardens and attaches itself to different portions of the pituitary. If these crusts

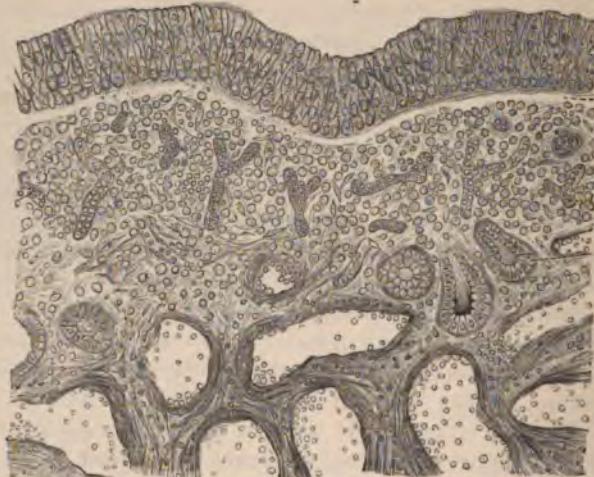


FIG. 56.—Rhinitis Hypertrophica Chronica (Bosworth).

are permitted to remain several days *in situ*, their odor will become very offensive. Those which are situated near the anterior nares are often detached with the finger; those which adhere further up in the nasal passages loosen themselves after several days, owing to the glandular secretion which takes place beneath them, and are then blown out of the nose under the form of lumps of nearly solid consistence.

The crusts which are detached with the finger are almost dry and scaly. The decomposition which takes place in the pent-up secretions gives them often a nauseous odor, but nothing comparable to that which is found as a frequent accompaniment of *ulcerous coryza*, or indeed of the desiccated secretions which are occasionally found in follicular disease of the post-nasal space. Their appearance, form, and coloration vary. When

fresh, they are light colored ; but when old, they are deep gray, greenish, or brown.

In an excellent study of nasal catarrh based on pathological investigation,* Dr. F. H. Bosworth, after earnestly protesting against the loose way in which the term "catarrh" is usually employed to designate various and wholly unlike pathological changes of the mucous membrane lining the nasal cavities, proceeds to demonstrate that there are in reality but two forms of nasal catarrh properly speaking. The one he designates as (1) *rhinitis hypertrophica chronica*, the other as (2) *rhinitis atrophica chronica*. In the first variety we find, notably, the following changes : an increase of the catarrhal discharge, a permanent stenosis from structural hypertrophy, and temporary

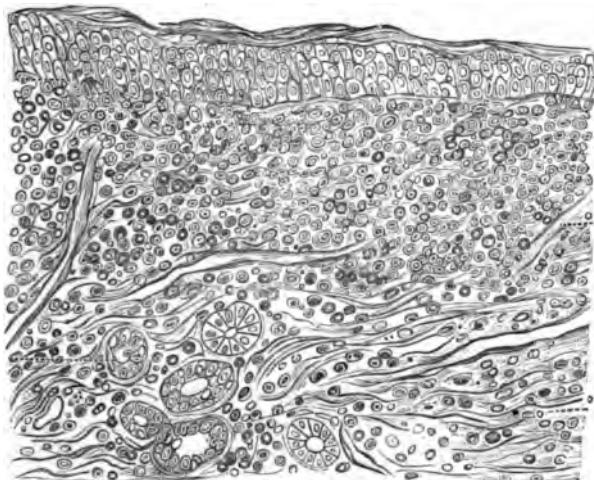


FIG. 57.—*Rhinitis Atrophica Chronica* (Bosworth).

stenosis from turgescence of the venous sinuses. The permanent stenosis, as may be clearly seen in the accompanying drawing (Fig. 56), depends mainly upon an increase of the epithelial layer, an excessive production of adenoid tissue, and an augmentation of connective tissue both in the mucous and submucous layer. Further, the racemose glands are more numerous, and the capillaries, besides being multiplied, are filled with blood which has become stagnant. The *temporary* but constantly recurring stenosis is probably caused by an impairment of the muscular tonicity of the venous walls, which allows their cavities to become rapidly distended under the influence of sudden atmospheric changes, or other frequent causes.

* *New York Medical Record*, June 10, 1882.

2. *Rhinitis atrophica*.—The prominent features of the atrophic process, as stated by Bosworth, are briefly as follows:

First.—Decrease of the covering epithelium, with profuse desquamation.

Second.—Decrease of the adenoid layer, with lack of blood-vessels, together with destruction of the acinous glands.

Third.—A total disappearance of the venous sinuses of the submucous layer of the membrane (Fig. 57).

In short, the process here described is not one due to the encroachment of connective tissue and consequent absorption of glandular formation, but rather a change of the epithelial structures into inflammatory corpuscles, (?) and the rapid shedding of the epithelial covering from the mucous membrane and the acini.

Symptoms.—Chronic coryza appears under two forms, the *humid variety* and the *dry variety*, which are evidently, in their advanced stages, the rhinitis hypertrophica and rhinitis atrophica of Bosworth. In rare instances, it is evidently more confined to one passage than the other, but one side is never entirely healthy if the other be diseased. The obstruction to nasal respiration is usually very slight. At times, however, by a passing turgescence of the parts, one or both nasal passages may become considerably occluded, so that respiration through the nose is for a time difficult. This temporary obstruction is apt to occur in damp or rainy weather, or in overheated or badly ventilated rooms.

Occasionally, one passage is so much obstructed for some minutes that it is almost impossible to breathe through it. This swelling, which comes on and disappears again, is due sometimes to the absorption of moisture; sometimes to the irritating effects of the respired air. The secretions from the nasal passages are augmented in quantity and now and then become quite fluid in consistence. The rule is, to find them thickened and more adherent to the mucous membrane than normal, so that they become detached with difficulty. When they are separated, they appear under the form of thick yellowish or greenish masses. If red blood-globules be mixed with them, which is often the case, they have a brownish color. If they have been pent up in the nasal passages during several days, they exhale an offensive odor. This is usually the case with very old forms of the disease. Before the nose can be satisfactorily examined in these instances, it must be washed out by means of a suitable spray, and the nose blown, or the secretions brought away with a camel's-hair brush or a covered cotton-holder. Cases have been cited where the amount of secretion from the nose was enormous. Morgagni cites the instance of a

woman in whom it was equal to one ounce in volume, every hour. There are likewise instances on record of a large quantity of albuminoid fluid issuing from the nose without any very satisfactory explanation of it. In one instance reported by Sauvages, the abundant secretion came on during the night. There were no other symptoms, and the cause was simply a passing irritation of the secretory glands of the organ, which showed itself only by this disagreeable symptom.

The term *rhinorrhœa* properly belongs to this condition of abnormal flux from the nasal fossæ in which the secretion is serous, or a sero-mucous fluid without acridity. The flux, in fact, constitutes the whole disease.

II. *The dry form of chronic coryza* is remarkable for the almost entire absence of all secretion. The patients complain of great dryness of the fossæ, and rarely if ever have occasion to blow their noses. In these instances the pituitary membrane is very dry and dull in appearance. There is no glistening or shining of the membrane. Here and there, but more particularly upon the septum, we notice a few small crusts which are very thin and dry, and also very adherent to the membrane. In these cases the tears do not flow as well as usual by the nasal ducts, and they are oftentimes associated with obstruction which commences in the punctum of the eyelid and extends through the entire length of the tear-passages. The walls of the latter are thickened by the extension of the catarrhal process from the nose, and their calibre much diminished. Thence we have the phenomenon of the tears flowing in part over the malar eminences (*epiphora*) and the conjunctivæ of the eyeballs and lids chronically inflamed. Proper medication of the nasal passages will at times produce marked relief of these symptoms. At times this is not sufficient, and the passage of eye-probes, or the slitting up of the punctum, followed by the repeated introduction of the probes, becomes absolutely essential as a means of cure. Respiration by the nasal passages is somewhat interfered with in the *humid* form, and indicates some coarctation of the fossæ. Under these circumstances we notice the nasal twang, and the patient is somewhat annoyed by the feeling that he does not breathe so freely as he would like. In the *dry form* of the disease, the fossæ are roomy and there is not this kind of discomfort. With infants and small children it is a familiar fact that even slight obstruction of the nasal passages will interfere considerably with their breathing and give such distress that they are unable to take a sufficient amount of nourishment. Hence it is, also, that we find children, thus affected, apt to hold their mouths partially open, and have rather a stupid or vacant look.

Sometimes the expired air is very offensive ; so much so, in fact, that the near approach of persons thus affected is positively disagreeable. With certain individuals affected with chronic coryza of long standing, the bad odor of the exhaled breath proceeds evidently from the changes which take place in the secreted mucus, by reason of the constant contact of the air and moisture. Again there are instances of individuals in whom the air from their nasal fossæ takes on a bad odor simply as all of their secretions are fetid. Such persons are afflicted frequently with abundant perspiration from the hands, feet, axillæ, groins, etc., which is also intensely disagreeable in its odor to others.

At times such a patient has his sense of olfaction so much blunted by the catarrh that he does not perceive any bad odor himself, and is only conscious of its presence from some one telling him of it. Even then he is disposed to believe that it proceeds from the condition of his stomach or throat, rather than his nose. In a few rare instances, the anosmia is complete and the patient cannot tell with his eyes shut what the substances are he eats, or what are the liquids he drinks. Whenever the sense of olfaction is altered or abolished, it would seem to be occasioned by the compression of the peripheric extremities of the olfactory nerve in the mucous membrane lining the nose, owing to excessive infiltration of its different layers. When, as it sometimes occurs, a deep inspiration is made, the patient *may* be sensible of a disagreeable subjective smell. Believing then that this odor is sensible to those persons who are in his immediate neighborhood, he becomes morbidly sensitive to mingling among his fellows, and will on this account shun the society of friends. This is especially true of women who are still young, and who on this account are more watchful of their *personal attractions*.

While some patients do not suffer at all, so far as pain *is* concerned, from chronic coryza, others have persistent frontal headache, which is most distressing. The pain may also be felt over the malar bones. When it exists in these localities for some time, and with any degree of intensity, it shows quite conclusively that the catarrhal inflammation has become propagated either to the malar or frontal sinuses or to both. There may be implication, however, of branches of the fifth pair of cranial nerves, so that neuralgia of these nerves adds its pain to those principally due to the affection of the pituitary membrane. These pains are often much aggravated by the use of the nasal douche, and will disappear so soon as the employment of this instrument is abandoned. Chronic coryza is apt to extend itself and to be accompanied with other conditions which make it somewhat infrequent to meet it exactly in the form which I

have just described, and which I have done mainly for the sake of clearness. In connection with nasal diseases, particularly when the turbinated structures or the septum are affected, it is not unusual to notice attacks of cough, which may become paroxysmal. Sometimes the cough is not explicable by any morbid condition of the pharynx, larynx, or trachea. In many such examples, Dr. John N. Mackenzie* has shown, clinically and experimentally, that the cough originates in the inflammation of the nasal mucous membrane, which contains certain sensitive areas. These areas are limited to the turbinated tissue and the septum, the most sensitive area of all being the posterior extremity of the lower turbinated bone and the septum immediately opposite. The physiological explanation of this phenomenon is possibly found in the doctrine of correlated areas,† the reflex taking place through the naso-dilative nerves from the superior cervical ganglion of the sympathetic. The reflex laryngeal cough may be caused, also, by extra irritants of different kinds, or by the passage of any instrument, as a probe or snare. It is heard so soon as contact takes place with the sensitive areas referred to, and not before. In the anterior portion of the nasal fossa contact with instruments may be made or other irritation borne without reflex cough being produced.

The degree of sensitiveness of the reflex areas in the nose varies with different individuals. In some, the slightest irritation of the nasal mucous membrane in the regions referred to will bring on cough; in others, it requires the long-continued irritation of the reflex centres, occasioned by chronic hyperaemia or hypertrophy of the cavernous structures, to evoke it. The interest pertaining to Dr. Mackenzie's careful investigations is not merely that of an ingenious physiological research, but the facts obtained are also replete with value of a practical kind, since they furnish us the key to the successful treatment of many cases which heretofore were obscure.

Complications.—The complication which is most frequent is undoubtedly (so-called) hypertrophy of the turbinated bones. While some thickening usually exists in the first stages of chronic coryza, it only properly takes the above name when it is much pronounced. The symptoms and treatment of this will be fully described in the next chapter. By reason of the extension of chronic coryza through the anterior nares, we may have a thickened and reddened condition of skin in their vicinity, and even actual excoriation, from the almost constant contact of acrid secretions. In obstinate, much prolonged cases, the upper lip

* American Journal of the Medical Sciences, July, 1883.

† Weakness, Deafness, Giddiness, etc., p. 74 et seq. London, 1880.

becomes swollen and the glands of the neck indurated and enlarged. The chronic coryza may also become propagated into the frontal and maxillary sinuses, so that we have those significant localized pains of which we have spoken. If the inflammatory condition be propagated to the post-nasal space, we soon have some thickening and hyperglandular secretion from the vault of the pharynx, with all those concomitant phenomena which characterize follicular disease of that region. It is no uncommon thing to find the disease in question accompanied by enlargement of the tonsils, elongated uvula, and chronic follicular pharyngitis. Whether mucous polypi in the interior of the nasal fossæ are a cause or an effect of chronic coryza cannot always be determined. Ordinarily, however, I am disposed to believe that the chronic coryza precedes for some time the appearance of the polypi and occasions their presence by the occlusion of some of the secretory ducts of the pituitary membrane. Vegetations of the fossæ as a complication of chronic coryza are infrequent. In a syphilitic or strumous constitution, what was for a long while a simple chronic coryza may assume the *ulcerous* form and cause more or less destruction of tissues, with the horrid ever-present symptom of ozæna.

If the glandular development at the vault of the pharynx become considerable, or if a polypus be here situated, it may lead to partial or complete occlusion of one or both Eustachian tubes, and thus occasion more or less complete loss of hearing. I have already pointed out the effect of chronic coryza upon the permeability of the nasal ducts and the ultimate consequences in producing redness of the conjunctivæ and epiphora. This experience is strongly corroborated by that of Dr. Henry D. Noyes, of New York, who writes, "For six or eight years I have been compelled to treat nasal catarrh with energy and regularity, in order to enable me to cure chronic conjunctivitis as well as chronic and acute otitis media."* Marginal blepharitis, the ophthalmia tarsi, has also, according to this eminent authority, similar affiliations. True it is that this latter affection is frequently idiopathic, or dependent upon optical errors, but it is equally related with the presence of chronic coryza. In some persons the chronic coryza appears to be the local origin of repeated attacks of facial erysipelas.

The duration of this form of disease is ordinarily considerable. It depends, however, in great degree upon the attention given to curative measures, and also upon the method of treatment adopted. If it be permitted to run its course free from all active medication, it has no tendency to get well, but will become

* Eye Troubles in General Practice. New York Medical Record, April 19, 1879.

gradually worse and extend itself in different directions. It will be extremely likely, moreover, to produce some or all of the complications just mentioned, which of course make its march more distressing, and diminish by so much the chances of a cure. When there is no constitutional dyscrasia and when the disease exists in its simple form, without complications, we can usually effect a cure after several months of methodic, uninterrupted treatment. Even then, if one be imprudent as regards general hygienic measures, or be exposed to sudden changes of temperature, and especially to cold, damp weather and high winds, the disease will be apt to manifest itself again and requires renewed treatment.

Diagnosis.—A thorough diagnosis of the case in hand can only be made by the skilful use of the nasal speculum and the small pharyngeal mirror, with the help of a strong artificial light. Whenever there is much accumulation of mucus, liquid or concrete, in the nasal fossæ, this must first be gotten rid of by means of a proper detergent spray and afterward by strongly blowing the nose, or else by employing a camel's-hair brush, or mop of some kind, with which a great portion of the liquid or inspissated secretions may be taken away. The pathological appearances of the septum and turbinated bones are now visible, and a tolerably accurate diagnosis can be made. Usually speaking, if we do not recognize the presence of any ulcerations, we can pretty surely affirm that they do not exist, even in parts removed from direct inspection. This is an important fact which results from the experience of well-known observers, and which I have good reason to believe is correct. In regard to the *diagnosis of the cause*, we are sometimes at a loss, but more frequently we can affirm, from signs and symptoms observed in other organs, that syphilis or struma is present, and probably to a great extent responsible for the existence of the chronic coryza. The appearance of the pituitary membrane will itself give no distinctive signs by which we can make an accurate diagnosis of the cause of the affection. As to the existence of ulcerations, of mucous polypi, of vegetations, of hypertrophied turbinated bones, etc., we have usually but little difficulty in determining their presence or absence, when the light is sufficient, and we have introduced and dilated the nasal speculum. For the diagnosis of the other complications we are forcibly compelled to inspect the pharynx and naso-pharyngeal space. When the other and various affections have been found either present or wanting, we can then, in considering the different symptoms properly belonging to chronic coryza, convince ourselves readily whether or not it exists, and also what is the stage and probable gravity of the disease.

Prognosis.—This is never grave so far as life is concerned. It is, however, a persistent and obstinate affection, and unless properly treated will last indefinitely. I have little doubt that, in bad cases, owing to the constant respiration of air made fetid by its passage over altered and decomposed secretions, the health of certain individuals is notably impaired. The appetite is at times diminished, owing to diseased secretions from the nasal fossæ which fall into the back of the throat during sleep, and are to some extent swallowed when the patient eats or drinks. The disease is especially serious in view of the alterations of smell, taste, hearing, and even sight, which may follow in its wake when it persists for any great length of time. The prognosis must finally depend upon the course of medication adopted, the dyscrasic influences present, and the avoidance of those accidental exciting causes, such as wet feet and the inhalation of tobacco smoke, which are so likely to recur, unless a constant warning be held before the patient's eye. The symptom "bad breath" is one of the most difficult to rid the patient of permanently when it exists, and just so soon as medication is stopped it is liable to return with its primary unpleasantness.

Treatment.—Whenever chronic coryza depends upon a dia-thetic condition, general treatment has primary importance. If scrofula be present, cod-liver oil, iron, the iodides must be given during long periods. Sulphur waters, both internally and externally, are useful. Salt baths alternating with sulphur baths, and taken once or twice a week, should be highly recommended. In winter time, Tidman's sea salt is a very proper addition to the morning bath. From one-half to one pound may be used on each occasion, and the body sponged thoroughly from head to foot with the salt solution. It will stimulate the capillary circulation of the skin and thus relieve the congested pituitary membrane. The salt sponging should be cold, or slightly tepid. One or two ounces of sulphide of potassium added to twenty or thirty gallons of water in a zinc or wooden bath-tub, and with the addition of one-half to one pound of gelatine dissolved in hot water, makes a suitable bath to be taken twice a week during half an hour and at a temperature from 90° to 95° F. If syphilis be recognized, the salts of mercury, combined with small doses of iodide of potash, are to be insisted upon, and this treatment should be persistently continued during some weeks and months. The bichloride and biniodide of mercury are the two best salts to prescribe. The biniodide as it is found in the formula vaunted by Gibert, and so much employed at the St. Louis Hospital, Paris, is the one I habitually make use of, giving from 3*i.* to 3*ij.* of this syrup three or four times a day after meals. If there

oe other evidences of a herpetic diathesis present, such as scaly appearances of the skin of the face or scalp, red blotches produced upon slight irritation of the cutaneous surface ; a tendency in youth to eczematous eruptions, pricking and itching of the skin in different parts, especially of the face, for insufficient causes, etc., I then use alkalies internally, combined with iron, or if the case be very obstinate I give small doses of Fowler's solution or the arseniate of soda with good results.

Unless I find syphilis, scrofula, or herpetism present, I usually content myself, in the treatment of the simple form of this disease of the nasal passages, with local medication. My experience has many times proved to me that in this way I can obtain excellent effects. For some time past my medication has consisted almost exclusively of local applications, frequently repeated, of different kinds of powders. I regret that I cannot agree with classical authors, such as Duplay, Fränkel, and Cohen, in regard to the efficacy and necessity of the use of some form of nasal douche for the successful treatment of this and allied affections. I formerly tried the nasal douche in a large number of cases, but gave up its employment, first, because I found it injurious to the ears of my patients, and then, too, it aggravated the inflammatory condition of the nose, produced hypertrophy of the turbinated bones, and increased rather than diminished the formation of crusts in the nasal passages. Of course, I do not wish to deny for an instant that the douche will bring away a great quantity of dried secretions from the nasal passages, but it will only do this directly from the lower portion of these passages, and while the temporary result may be effective and apparently good, the after-effect is decidedly injurious. The nose will be, in a very short time, as much clogged up as ever, and happy is the patient who does not suffer from acute secondary pains in the forehead and ears. The plea urged by the majority of writers is that the douche must be employed because we have no other effectual means of ridding our patients of the excessive amount of hardened secretions which collect in their nasal passages. They urge besides that these secretions, by remaining in place, keep up the disease, and that we can never hope to cure the latter unless we first perfectly cleanse the diseased organ. I hold they are wrong : first, because I find the means adopted of cleansing injurious ; second, because I do not acknowledge its necessity in the great majority of instances ; third, because, if it be necessary to wash out the nasal passages, it can be as effectually and much more safely accomplished by means of the coarse-spray producer of Dr. Lefferts, than by any one of the different forms of Thudichum's douches. Sprays themselves are only useful when there

is a large amount of hardened secretions which remain impacted in the nasal passages, in spite of repeated blowing the nose, or the application of astringent or other powders. Whenever I make use of a detergent or disinfecting spray, the following formula, borrowed from Dr. Dobell, of London, is the one I most frequently use :

B. Acid. carbol. liq.....	℥ xl.
Sodii babor.,	
Sodii bicarb.....	aa 3 ij.
Glycerinæ	3 viij.
Aquæ.....	3 viij.

M. et S.—For nasal spray.

By spraying this solution for a few moments up each nostril alternately, until its presence is felt in the back of the throat, and then asking the patient to blow his nose, I can usually, after repeated trials, secure a very thorough cleansing of the nasal passages. If this is not obtained the first time the patient is seen, on the second, third, or fourth occasion absolute success will crown my efforts. In very bad cases the spray should be used several minutes (three to five) once every day for a week, then every other day for many weeks, or until the crusts have almost ceased to cause inconvenience. The use of this spray causes slight pain at first, and during a minute or two. After this time has elapsed, it is relatively painless, and the patients rather express a sense of relief than the contrary. The following is a prescription for a spray which has been extensively used by well-known specialists in New York City :

B. Acid. salicyl.....	3 i.
Sodii babor.,	
Sodii phosph	aa 3 ij.
Chloral hydrat.....	3 i.
Glycerini,	
Aquæ rosæ.....	aa 5 i.
Aquæ	q. s. ad 5 viij.

M. et S.—For nasal spray.

Carbolic acid may be substituted here, also, for salicylic acid with excellent effect. One of my colleagues tells me that by the timely and repeated use of the spray last mentioned he can ordinarily arrest an attack of acute coryza in its initial stage. During the past two or three years, and in view of the experience of Dr. Forster, of Massachusetts, as reported in the *Boston Medical and Surgical Journal*, I have often replaced the car-

oic acid in Dobell's formula by thymol one part to one thousand, or even five hundred. The thymol, while being a good disinfectant, is also, by reason of its agreeable odor, a pleasant addition to the atomized fluid.

In connection with this point it is proper to mention the now popular remedy known as "Listerine," which has been lately introduced to the profession, and which contains the essential antiseptic constituents of thyme, eucalyptus, baptisia, gaultheria, and mentha arvensis. Each fluid drachm also contains two grains of refined and purified benzo-boracic acid.

A formula for a good cleansing and disinfecting solution, highly recommended by Dr. G. M. Lefferts,* is :

B. Sodii bicarb.,	
Sodii biberat	3 ss.
" Listerine "	3 i.
Aquæ.....	ad 3 iv.
M. et S.—For nasal spray.	

"Thus 'Listerine' may be used in this or in any of the other solutions of alteratives, astringents, or resolvents, and will be found to serve a useful and pleasant purpose where an antiseptic is desirable."

If the coryza has advanced far toward the hypertrophic stage, then Lefferts commences at once with :

B. Iodini cryst.....	gr. iv.
Potass. iodidi	gr. x.
Zinci iodidi	3 i.
Zinci sulpho-carbolate	3 i.
" Listerine ".....	3 i.
Aquæ.....	ad 3 iv.
M. et S.—For nasal spray.	

The use of *cold* in the treatment of diseases of the upper air-passages has proved, in the experience of Dr. S. H. Chapman, to have very marked advantages over the employment of *heat*, especially as it enables the patient to expose himself to the elements without risk. "In chronic nasal stenosis, due to all causes, except the actual hyperplasia of the tissues and abnormal formations," any ordinary spray reduced almost to the *freezing* point will diminish the obstruction, as well as allow a stronger local application to be made than is customary, without occasioning subsequent pain. An equally simple and effective method, also, of employing *cold* consists in forcing a stream of

* Medical News, May 3, 1884, pp. 492, 493.

cold, moderately dry air through a narrow, elongated inhaler, packed in ice and salt mixture, by a hand-bulb.

“Thus may be obtained a dilating force and pressure of very cold air.” Fluid extract of hamamelis and boracic acid in solution have been employed in spray by Dr. Chapman with good results.

The prolonged use of a very cold spray will abort suddenly the pain, distress, and severe lachrymation produced by the spray of a very strong solution of nitrate of silver in the treatment of chronic rhinitis with ulceration. The *cold* spray is found much more agreeable to patients than *heat*.*

In my office, I make use of the glass tubes of Sass, for the anterior or posterior nares (as the case may be), attached by means of a short piece of rubber tubing and a bayonet joint to a longer tube in rubber, which is attached directly to a cylinder of compressed air. I thus have an effectual means of throwing a very fine spray with considerable force into the nasal passages, and its penetrating power is very great. If Lefferts' hard-rubber spray be used, it is best to employ only one hand-ball as a means of forcing the air *through* the spray-producer. If two balls be employed, the spray continues to come from the capillary tube for a moment or two after compression of the bulb has ceased, whereas with a single bulb the formation of the spray is arrested almost as soon as compression of the bulb ceases. As I said before, the use of any form of spray is only required in aggravated forms of chronic coryza. In those forms which one sees habitually in one's office, among people in tolerably easy circumstances, there is rarely need to use it. In such cases I should now advise my patient to wear the new nasal inhaler, illustrated on page 45, a short time morning and evening. While wearing it, respiration should be carried on entirely through the nose; and in this way a properly medicated air can be brought into constant contact with the diseased pituitary membrane, the different drugs employed in the inhaler, as well as the length of time during which they can be used advantageously, may be left somewhat to the individual choice and experience of the practitioner. As I have stated further on in speaking of the treatment of follicular disease of the naso-pharyngeal space, I have found too frequent or prolonged employment of dry vapors apt to arrest glandular secretions too quickly. I believe, therefore, in Dr. George Moore's inhaler it would be wise at first to dilute the essential oils when they are inspired continuously for half an hour, an hour, or longer still. The new nasal inhaler has two great advantages over the old form of nose-mouth respi-

* Archives of Laryngology, vol. iv., No. 1, p. 31.

ator in that it does not interfere with the patient's speaking when it is adjusted to the nose, and further, it conducts the treatment through the nasal passages wholly, and not in part through the mouth, which frequently requires no medication.

The following prescriptions, which are also very useful in buccal inhalation when there is subacute pharyngitis, may be employed advantageously in chronic coryza :

R. Acid carbolici,	
Creasoti	aa 3 i.
Tinct. iodinii (ethereal).....	3 iv.
Alcoholis.....	3 i.
M. et S.—For inhalation.	
R. Ol. pini sylvestris.....	3 i.
Succii conii	3 ij.
Tinct. benzoini comp.....	3 ij.
Magnesii carb.....	3 ss.
Aquaæ	3 i.
M. et S.—For inhalation.	

I am not, therefore, prepared to indorse Coomes' * views on the efficaciousness of sprays above all other means in the treatment of nasal affections, and believe he has greatly magnified their utility.

At the International Congress of Laryngology, which met at Milan, September, 1880, Dr. Masucci read a paper on the employment of "nasal douches of compressed air," according to the method of Dr. Massei. The apparatus of Waldenberg was employed by him and treatment was directed by this means against nasal blennorrhœa, stenosis, and other affections of these passages. The air used was either pure or mixed with volatile substances, such as carbolic acid or turpentine. Modification of the secretions of the mucous membrane and mechanical dilatation of the fossæ may be thus produced.

In the dry form of catarrh it is occasionally useful to employ fumigations of simple steam, or better of steam impregnated with benzoin, oleum pini sylvestris, creasote, or iodine. These may be used in suitable doses in any form of steam-inhaler provided with a nozzle. The most recommendable forms are MacKenzie's eclectic inhaler, and Maw's inhaler. A pint of hot water (150° F.) is placed in either of these inhalers and the active ingredients introduced into the water and stirred a moment or two, the lid is put on, and the nozzle fitted to either side of the nose. The impregnated steam is then slowly drawn up

* Naso-pharyngeal Catarrh. Louisville, 1880.

into the nasal passages, during five minutes, after which time the crusts are frequently sufficiently loose to be blown out of the nose. Moreover, in those irritable conditions characteristic of dry coryza, the effects of the above remedies are either soothing or stimulating. The following formulæ may be used :

R. Tinct. benzoini comp.

S.—A teaspoonful for each inhalation.

R. Ol. pini sylvestris..... 3 ij.
Magnes. carb. levis..... gr. xc.
Aqueæ..... ad $\frac{2}{3}$ iiij.

M. et S.—A teaspoonful for each inhalation.

R. Creasoti $\frac{2}{3}$ ss.
Magnes. carb. 3 i.
Aqueæ..... ad $\frac{2}{3}$ iiij.

M. et S.—A teaspoonful for each inhalation.

R. Tinct. iodinii comp $\frac{2}{3}$ i.
S.—Ten to twenty drops for each inhalation.

The aromatic spirit of ammonia, the juice of hemlock, the oil of hops are also very useful adjuncts to the hot water, and the steam which comes off has soothing or mildly stimulating properties. For my own part, however, I have found ointments introduced by means of a small camel's-hair brush along the lower meatus, and in contact with the septum and lower and middle turbinated bones, more useful in detaching the crusts of dry coryza of a chronic form, and in soothing the irritated membrane, than the vapors just mentioned. I have usually employed pure vaseline, vaseline with calomel (3 i. to $\frac{2}{3}$ i.), cold cream and white precipitate, and belladonna ointment. I tell the patient to employ one of these each evening upon retiring and each morning on rising. Any excess of ointment remaining upon the outside should be rubbed off with a fine towel, or handkerchief. After a few days I hear no further complaints in regard to the crusts forming upon the septum and turbinated bones. But as I said before, my principal agents of cure at present are powders. The powder-blowers of Dr. Andrew H. Smith or Dr. D. H. Goodwillie may be used, or a straight hard-rubber tube with a properly shaped nozzle or distal extremity for the nostril, and attached, as the spray-producer, by its other end to the cylinder of condensed air. There is a receptacle with a sliding cover in the powder-blower for the powder employed (Fig. 43). By turning a stop-cock fixed to the tubing at the proper time (just as with the spray), the air from the cylinder passes into the tube and

forces the powder almost everywhere throughout the nasal passages. The amount of force of the compressed air used may be accurately determined and regulated by means of a gauge at its upper extremity. These powders should be employed every day, every other day, twice a week, or once a week, according to their nature, composition, and the indications of the disease. I usually commence treatment by means of a rather mild powder, such a one, for example, as the compound powder of belladonna and morphine or the powder of bismuth and morphine (Ferrier's), already cited, when I spoke of my treatment of acute coryza. After a few days I commence with the following powder and make an application about once a week to the nasal fossæ :

R. Bismuthi subnit	5 ss.
Pulv. acacie	3 ij.
Pulv. argent. nitratis.....	gr. x.-xij.
M.—Fiat pulvis.	

The application of this powder will occasion quite a sharp pain which will last from a few minutes to an hour or more. The tears for a few moments flow over the cheeks, and the patient during this time suffers quite acutely. The tolerance of patients for the use of this powder differs a great deal ; some bear it very well, and after a few applications have been made, do not in the future object to its use at all. Others suffer from its employment very considerably ; it causes them headache to such a degree that they are incapacitated, a whole afternoon after its application, from doing any kind of work, and women especially are sometimes obliged to remain on a sofa for some hours. Finally, with several patients, I have been obliged to abandon its use on account of the pain caused. What is here true of nitrate of silver in the form of powder is equally true of the same salt in solution, and also of many other metallic salts, such as those of copper, zinc, and mercury. The mode of applying the silver salt in powder rather than in solution is preferable always on the mere score of safety in regard to staining the skin in black. With the powder one need scarcely fear, although as a measure of precaution, when any of the powder remains outside the nose, I wash it off with the end of a wet towel. While I am using the nitrate of silver powder once a week with a patient, I still continue to use other powders on intermediate days. The following are frequently employed by me with good success

R. Pulv. iodoform.....	3 ij.
Pulv. camphoræ.....	3 i.
Pulv. acid. tannici.....	gr. v.
Pulv. acacie.....	3 ij
M.—Fiat pulvis	

R. Hydrarg. chlor. mitis.....	3 i.
Pulv. sacch. alb.....	3 ij.
Pulv. morphiæ sulph	gr. i.
Pulv. bismuthi subnit	3 ij.

M.—Fiat pulvis.

Other combinations are highly recommended by physicians of large experience. Among these I have borrowed some from Dr. Goodwillie, which have proved very beneficial in his practice. These are :

1. R. Benzoini	3 i.
Morphiæ muriat	gr. vi.
Bismuthi subnit.,	
Potass. nitrat	aa 3 ss.

M.—Fiat pulvis.

Valuable for its sedative action. To be used in hyperæmic conditions with pain. In the beginning of an attack of rhinitis, coat the mucous surface with it.

2. R. Aluminis	3 i.
Acaciæ,	
Bismuthi subnit.,	
Potass. nitrat.....	aa 3 iv.

M.—Fiat pulvis.

Useful where a powerful astringent is indicated, as in severe epistaxis.

3. R. Iodoformi,	
Camphoræ	aa 3 i.
Bismuthi subnit.,	
Potass. nitrat.....	aa 3 iss.

M.—Fiat pulvis.

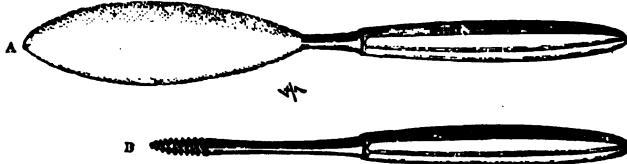
A good antiseptic. To be used where the discharges are fetid, or ulcerations or granulations are present. The camphor masks the odor of the iodoform.

Powdered galanga root, the Indian catarrh remedy, has also been used with good results by Bosworth as a powerful stimulant and alterative locally, in this disease. This root is reduced with much difficulty, however, to an impalpable form, and as it is apt thus to excite more or less acute inflammation of the nasal mucous membrane, it is preferable to employ it in the form of spray behind the palate when a diluted alcoholic tincture is made from it. If used in this manner, galanga, by its

atic and pungent properties, exercises a decidedly bene-action, which in some instances is superior to the metallic gents. When excoriations exist in the nose, powdered dula dusted over the raw surfaces appears to have a rapid ing action. This powder combined with boracic acid is to be equally advantageous in arresting purulent dis'es from the nasal passages, as it is known to be in purulent oœa (Sexton).

Goodwillie insists very properly upon the value of very rituration of all powders employed to medicate the nasal ges. In order to obtain the best therapeutic results, the ers should be reduced to a state of minute division, until are impalpable, and when, if blown into the air, they are nded for a while like smoke. In order to obtain the desir-degree of subdivision with valuable gums, or gum resins, been found necessary to triturate them in large quantities e time very slowly, and at a low temperature.

henever I find the symptoms of post-nasal catarrh adjoined



—Dr. Gottstein's Cotton-wool Tampon. A, screw armed with wadding tampon; B, the naked screw (MacKenzie).

those of chronic coryza, and this is very frequently true, te use of these same powders through the posterior nares, ell as anteriorly. The figures of the curved hard-rubber

I then use have already been shown (Fig. 43). A novel od of medicating the nasal fossa has been first recom-mended by Woakes.* Cotton-wool is employed by him as the le for carrying definite quantities of different remedies—eptic, astringent, stimulant, or sedative—into different of the nasal passages, in the following manner: A suffi-quantity of cotton is wrapped in the form of a spindle a piece of string, or silk, and the two ends being tied to-r, it is pushed back to any particular point of each fossa, a blunt probe. The two outer ends of string are tied to-r under the septum, and the plugs are allowed to remain sition twenty-four hours, when they are readily removed action on the string.

Gottstein † has also employed the tampon (Fig. 58) with success, in those forms of rhinitis in which crusts habitually

form. In his belief no other treatment is equal to it. Secretion is favored by the presence of the tampon, and the crusts rapidly disappear from the nasal passages. In the atrophic form of nasal catarrh, besides promoting secretion, the tampon will remove all fetid odor from the breath, except in those instances where necrosed bone is present. In order that the tampon may be followed by good results in this affection, it must be placed in direct contact with the mucous membrane. While attributing great importance to the curative action of the tampon, Gottstein does not throw aside other local and constitutional measures in endeavoring to relieve the symptoms of these patients. The use of the tampon is the only method, however, which destroys ozone in atrophic rhinitis.

Besides the local treatment above considered, I would refer my readers here as elsewhere to the general principles laid down in a former part of this work, for the treatment of various forms of coryza. Proper food and clothing, cleanliness, freedom from exposure to rapid changes of temperature, etc., are quite as important in this disease as a means of prophylaxis and cure, as they are believed to be for other allied affections.

NOTE.—See Abortive Treatment of Acute Coryza at the foot of page 56.

Since the foregoing statements were sent to press, and very soon after the original experiments of Bosworth (New York Medical Record, November 15, 1884), in making local applications of solutions of cocaine to the nasal mucous membrane, I have made use of a four-per-cent. solution of this drug, with great success, in diminishing the obstruction of the nasal passages in acute coryza. Although the sneezing and irritation accompanying this affection were not completely arrested, they were much diminished; and I have little doubt, at present, if the applications of cocaine had been repeated three or more times, at intervals of one or a few hours, that the attack of acute coryza would have been aborted. Perhaps ammonia, aconite, or one of the other drugs referred to in the text, taken internally, would render the abortive effect more certain, particularly in severe cases at the initial stage. My experience, I am pleased to find, has been somewhat similar to, and almost synchronous with, that of Hooper (Boston Medical and Surgical Journal, December 13, 1884), and Sajous (Philadelphia Medical News, page 679, December 20, 1884).

CHAPTER VIII.

HYPERTROPHY OF THE TURBINATED BODIES (HYPERTROPHIC RHINITIS).

THE term hypertrophy of the turbinated bones is a faulty one, for the reason that real hypertrophy of these bones very rarely exists. Sometimes, indeed, it is true that one or more of these bones have become softer, more spongy, and more voluminous than they are in a perfectly healthy nose, but these are infrequent cases, and the very general rule is scarcely less true, *i.e.*, that hypertrophy is confined to the mucous membrane and submucous layer which cover these structures.* With the inferior turbinated bodies, particularly, this hypertrophy is situated in the erectile stroma, or reticular structure, which lies between the periosteum covering the bone directly and the mucous membrane which bounds the outer wall of the nasal fossæ. Here we have a formation analogous or almost similar to that of the labia majora or penis, which is readily irritated and capable of rapid augmentation in size, and equally rapid collapse. This we are all familiar with, by our experience of what takes place in an acute attack of coryza. The nasal passages may be almost occluded, and a few seconds afterward they may become pervious in a measure, to be again obliterated in less time than one can believe who has not carefully noted the change. This phenomenon of daily observation occurs, although less markedly and rapidly, in chronic as in acute coryza. Many writers ignore the entity of permanent hypertrophic thickening of the soft tissues covering turbinated corpora cavernosa, in their description of the affections of the nose, and consider it as an ordinary and almost necessary sequela of simple chronic coryza. According to my belief this appreciation is incorrect, for although this hyperplasia of soft tissues is present in a moderate degree in many cases, whenever it exists to an exaggerated extent its

* Since the researches of Dr. D. Bryson Delavan the foregoing statement is not so correct as when it was first written. In a very able paper published in the Archives of Laryngology, July, 1882, this writer has shown that real hypertrophy of the turbinated bone occurs more frequently than had been previously believed. He made a careful examination of the skulls in the Hyrtl collection purchased by the College of Physicians of Philadelphia, and found in the one hundred and forty skulls therein contained the middle turbinated bone hypertrophied in eleven instances, or seven-eighths of one per cent.

symptoms and pathological conditions are so characteristic that it certainly merits a separate chapter. Upon examination of the nose anteriorly, by means of the nasal speculum, the pituitary membrane is red, thickened, sometimes velvety, and very vascular. Microscopical examination shows a hypergenesis, and often also a hypertrophy, of the normal elements of the mucous membrane. In a case cited by Duplay there was an exaggerated development of the glands, and the hypertrophied chorion was covered with several layers of ciliated epithelium. Sometimes the hypertrophy of the membrane is general, sometimes it is particularly localized to the middle and inferior turbinate bodies. The rational symptoms of hypertrophy of the turbinate bodies resemble very much those of simple chronic coryza, only they are more pronounced, and some are added which do not exist in this last-mentioned disease. There is a characteristic nasal voice, which by its persistence indicates hypertrophy of the pituitary membrane and the thickening of the laminæ of the nose. We have all observed this nasal tone of voice, or "twang," as it is oftentimes called in common parlance, and it would appear to be somewhat special to Americans as a race. Foreigners, and more particularly Englishmen, speak laughingly or sarcastically of this national peculiarity. I do not think, however, that they or we are generally familiar with its true etiology, inasmuch as I am inclined to the belief that it is usually considered as being due to a faulty or improper use of the laryngeal muscles, or those of the palate, to produce phonetic sounds. This conviction, though popular, is unfounded in fact, and I feel quite sure that, in the large majority of instances, a nasal intonation of speech is correctly explained by the more or less complete closure of the nasal passages. Thus the distinct pronunciation of the so-called nasal consonants (*m*, *n*, *p*, *b*, etc.) is made more than difficult. In the normal condition of the nasal passages there is a rapid and considerable current of atmospheric air which passes backward and forward through them during every movement of inspiration and expiration. When they are obstructed from any cause, our articulation of certain words becomes thick, or, as it were, muffled and deadened, owing not so much to the fact that we talk in reality through the nose, as simply because these air-chambers no longer existing, except to a very limited extent, the normal resonance is no longer given to these sounds when uttered. In some instances the hypertrophied condition of the pituitary membrane is not considerable; it causes but slight obstruction of the nasal passages and does not sufficiently account for the nasal sound given to the articulation of certain words. Under these circumstances the soft palate has frequently participated in the chronic inflam-

matory changes of the Schneiderian membrane, and has become more or less thickened and infiltrated in its mucous covering and submucous layer. We may then have slight paresis of the muscular fibres which are intrinsic to this organ and which is the efficient cause of a want of coaptation of its free border with the posterior wall of the pharynx, both in deglutition and in the enunciation of certain words which require for their pure and correct delivery a perfect physiological action of this organ. Is it merely the muscular fibre which is here diseased, compressed, or atrophied and degenerated, as a normal consequence of contiguous inflammation; or are the terminal nerve-filaments of the spinal accessory, glosso-pharyngeal, and the branches of the facial which distribute themselves to the glosso-palatine muscles on either side, affected with chronic neuritis? Reasoning by analogy, I would say that in these cases both explanations may be given, and both are, in a measure, acceptable as true explanations of a loss of functional power. Tumors of divers sorts, and especially mucous polypi, taking origin in the mucous lining or bony walls of the nasal fossæ, and filling them up more or less completely, may and do produce this same nasal intonation; but their existence is much less frequent than the condition previously mentioned and therefore less important, viewed in this aspect. Besides, these neoplasms present features, as a rule, which lead readily to their recognition. Whereas simple hypertrophy of the pituitary membrane, to a limited extent at least, may remain ignored for a long period of time, unless special attention be directed toward it as the cause of defective speech, the patient is conscious of a more or less constant feeling of stuffiness in the nasal passages, and at times the nose is so much obstructed he can scarcely breathe. Under these circumstances the nose is blown with considerable difficulty.

The following very remarkable history and drawing I owe to the courtesy of Dr. Lefferts, of New York. In this instance the hypertrophy of the mucous membrane covering the inferior turbinated bones was so excessive as to produce *total occlusion* of the posterior nares : *

CASE I. Hypertrophy of the Mucous Membrane covering the Inferior Turbinated Bones.—T. S., aged twenty-one; painter. The patient states that for years he has suffered from the ordinary symptoms of a *chronic nasal catarrh*, and that during the last four years the most noticeable symptom has been the change

* It will be remarked, in the perusal of this case, that the voice was "dull or deadened." As there was "marked adenoid hypertrophy," the cause of this *special* change of voice would be found *altogether* in this presence were the condition of the *inferior turbinated* bodies not such as to *exaggerate* notably this feature of Dr. Lefferts' case.

in the *voice*. Two years ago the right naris became gradually occluded, and six months later the same condition occurred in the left; the voice at the same time lost all resonance and became *dull* or *deadened*. He has ringing and *noises in the ears*, especially when speaking, but there is *no diminution in the sense of hearing*. He states that at times, when about to speak, he apparently loses control of his voice, and that it requires a certain effort and a clearing of the throat of mucus before it can be regained. He complains of restless nights, and of suffering much inconvenience from the occluded state of the nostrils.

Examination shows follicular pharyngitis, moderate hypertrophy of the tonsils, marked *adenoid hypertrophy* at the *vault*



FIG. 50.—Hypertrophy of the Mucous Membrane covering the Inferior Turbinated Bones (Lefferts).

of the pharynx, and total occlusion of the posterior nares, due to the hypertrophied tissues of the inferior turbinated bodies impinging one against the other and occupying the whole posterior nasal space. Between these masses and above can be seen a small portion of the septum narium. The orifice of the right Eustachian tube is pressed upon and nearly occluded; that of the left is intact.

There is a decided augmentation in the amount of nasal secretions, or there is no more than seems normal. The qualities of these secretions are not always obviously changed. The voice has usually a decided nasal intonation. Epistaxis is not infrequent with some individuals; with others it rarely or never occurs. If the hypertrophy be excessive, the patient cannot keep the mouth tightly shut even during ordinary respiration. Upon the slightest exertion there is dilatation of the alæ nasi and apparent dyspnoea. The sense of olfaction is frequently much impaired, as also the sense of taste. In some patients, hearing rapidly

becomes defective. All these symptoms are readily explained by the obstruction which exists in the nasal fossæ. Such patients come to us seeking relief, as a rule, *not* for excessive secretion of mucus behind the anterior nares, but on account of inability to breathe through the nose. We are told that they snore during sleep and sleep with their mouth open. In the morning they awake with a parched, dry feeling in the back of the throat. At first their power to expectorate seems almost lost. And yet they are conscious of being annoyed by a small amount of viscid inspissated mucus, which adheres intimately to the posterior portions of the nasal fossæ. After several strong efforts of hawking and scraping the throat, as it were, they are able to spit out this irritating and offensive matter. Sometimes, before being able to effect it, they are obliged to gargle their throat with water a few moments, and they will then almost always get rid of the small mass, crust, or pellet of mucus without further inconvenience. If direct inspection is made of the pharynx, we see it red and irritable; at one time somewhat shiny and glazed, at another of a dull, turbid hue, and with more frothy mucus upon its sides than should be present. The column of air which passes through the nasal passages is insufficient for quiet breathing, owing to the close approximation of the swollen soft parts which cover the middle and inferior turbinated bones with the nasal septum on either side. Hence more or less dyspnoea; hence, too, the stuffy sensations in the nasal passages of which we have already spoken. From this condition, also, proceeds the interference with the olfactory and gustatory sense. Inasmuch as the indrawn air does not reach the upper portion of the nasal fossæ where the peripheral extremities of the olfactory nerves are distributed in anything but an extremely small volume, these nerves are not sufficiently impressioned and the sense of smell is almost notably blunted. Several times I have known complete anosmia to result from this condition, and I have explained it in part by the small quantity of air which reached the membrane of special sense, in part by the pressure which has taken place upon the nerve-tubes, owing to infiltration of tissues.

I have seen several cases of the kind I here refer to; among them was that of the Newport lady (sent to me by Dr. William Birkhead, of that city), Mrs. A. M., forty-nine years of age, married, the mother of one grown child, who has had imperfect taste and smell during the past two years. This lady has never had any severe illness; she is not aware of the efficient cause of her symptoms unless they originated in a severe cold from which she suffered shortly before their appearance. The cold she mentioned was the most severe she ever had had, and left her with

an unpleasant taste in the mouth which lasted several weeks, and then gradually wore off, leaving her taste much impaired. Within a year her taste has somewhat improved. The sense of smell was lost at the same time as that of taste, but is now present, though in a less degree than the latter. She can now distinguish between salt and sugar, acid and bitter, etc. ; she cannot distinguish between different kinds of meat, as mutton and beef. She can smell ammonia, cloves, etc., but cannot distinguish them by taste. She breathes easily, no pain in nose or throat ; has very slight post-nasal catarrh (whitish and watery discharge), appetite good, tendency to constipation. Physical examination shows only moderate thickening with follicular disease of pharynx and post-nasal space, and no other lesion of the pituitary membrane. The diagnosis is incomplete anosmia with much impaired taste, due probably to compression of the peripheral fibres of the olfactory nerves by plastic exudation into the superior portion of the nasal mucous membrane. The prescription in this case is : Phosphide of zinc, gr. $\frac{1}{16}$; extr. nucis vomicae, gr. $\frac{1}{4}$, t. d. s., and the use of the following powder daily through the anterior and posterior nares, with powder-blowers.

R. Pulv. morphiae sulph	gr. i.
Pulv. belladonnae fol.....	gr. x.
Hydrarg. chlor. mitis.....	gr. xx.
Sodii bicarb.....	gr. xv.
Pulv. acacie.....	$\frac{5}{3}$ ss.

M.—Fiat pulvis.

Electricity locally applied has thus far remained without perceptible good results. The prognosis of this case is doubtful.

Case II. is that of Dr. C. M., married, past middle age, who enjoys excellent general health, his only trouble being that of incomplete anosmia, and partial loss of taste, probably occasioned by a cold taken some months ago. This patient was sent to me by Dr. D. B. St. John Roosa, of New York. Upon physical examination of the nasal fossæ, some thickening of the pituitary membrane, especially upon the left side, was found. There were also "granulations" moderately hypertrophied in the post-nasal space. This patient has already employed many remedies, both local and general, with but slight advantage. Among others the following "smelling salts," of which the formula was given him by Mr. Durham, of London, and which he tells me is much used and vaunted in England to-day ; and as it seems to me a rational formula, I herewith give it to my readers.

1. R. Acid. carbolic. pur.....	3 i.
Carb. ligni.....	$\frac{5}{3}$ ss.
Iodini pur	3 i.

M.

Mix the c. a. p. with half the wood charcoal thoroughly. Mix the iodine with the other half and mix together.

2. B. Ammonii sesquicarb.....	3 i.
Carb. ligni.....	3 ss.
Camphoræ	3 i.

M.

Add No. 1 and No. 2 lightly together, and add ol. lavand. gtt. xx, and as much compound tincture of benzoin as is needful to make a thick paste, and put in a wide stoppered bottle.

The prescriptions I ordered for this gentleman were as follows :

B. Fowler's solution, gtt. i., three times daily after meals ;
increase to gtt. iv., three times daily.

B. Pulv. camphoræ,

Pulv. iodoform.....	aa 3 ss.
Pulv. acid. tannici.....	gr. v.
Pulv. morph. sulphat	gr. i.
Pulv. belladonnæ fol.....	gr. x.
Pulv. acaciæ.....	3 ss.

M.—Fiat pulvis. S.—Use with powder-blower once a day.

The degree to which the function of olfaction is interfered with by the occlusion of the nasal passages depends upon the amount and situation of the obstruction. If there be malformation of their upper portion, so as to occasion complete obliteration, the sense of smell is perverted and numerous morbid impressions due to this perversion are prone to follow. In a case reported by Morgagni more than a century ago, a deviation of the crista galli was the occasion of diminution of olfactory power on the side where fewer nerves passed through the foramina of the cribriform plate by reason of its abnormal narrowness. Whenever the obstruction occurs in the lower meatuses normal respiration through the nasal passages is changed into buccal respiration. The result is that the indrawn air is not sufficiently moistened, or freed of its impurities, and is very likely to occasion inflammation of the pharyngeal, laryngeal, or bronchial mucous membrane. Many coughs, without doubt, originate in a condition of hypertrophic nasal catarrh, and when once the continuous parts have been attacked, the morbid process extends, becomes subacute or chronic in nature, and is with difficulty gotten rid of, even though the primary nasal occlusion be thoroughly cured. A mistake often made by the general practitioner, and referred to by Dr. John N. Mackenzie,* is to infer that the

* Transactions of the Medical and Chirurgical Faculty of Maryland, 1883.

nasal fossæ are in a healthy condition because respiration can be freely carried on through their lower portion. Under these circumstances, it may be, however, that the upper nasal chambers are crowded with polypi, or that the naso-pharyngeal vault contains masses of adenoid tissue.

One of the symptoms from which patients with hypertrophy of the nasal mucous membrane suffer most is great dyspnea upon even slight physical exertion. The difficulty of breathing is, also, very annoying when for any reason, as in swallowing, drinking, smoking, etc., they are obliged to keep their mouth closed. By reason of this occlusion of the nasal passages, they sometimes believe they are affected with serious disease of the heart, or lungs, when auscultation of these organs shows them to be perfectly healthy. Mackenzie, of Baltimore, is disposed to regard the recurring conjunctival inflammation which frequently accompanies nasal catarrh, as a reflex vaso-motor phenomenon and not explained, as it usually is, by an extension of the inflammatory process through the nasal duct.

The cases of profuse nasal hemorrhage spoken of by this author as occurring in the hypertrophic form of catarrh, and sometimes to such a degree as to imperil life, I do not remember to have seen and must regard them as very exceptional.

Bearing in mind that much of our keen appreciation of sapid substances depends upon their volatile principles which affect sensibly the organ of smell, we readily appreciate how to a certain extent taste is also rendered less acute and discriminating by blocking up the nasal passages. But this is not all ; the hearing is soon affected. Adults and children of advanced years are conscious of uneasy sensations in their ears (itching, tickling, buzzing, etc.), and by degrees their auditory function is surely rendered less perfect. With such persons, these symptoms occasion solicitude, awake reflection, and a physician's advice is usually sought. With infants or very young children the case is different. They have repeated attacks of acute coryza, which yield sooner or later to time and household remedies, and the mothers or guardians have no concern about the ultimate impairment of hearing. The child grows and reaches the age of six or eight years. Then it is noticed for the first time, with regret and astonishment, that the little one is decidedly deaf and unable perhaps to keep up with his class at school. At this period, however, there may yet be hope, and if the disease be at once properly attended to by a competent aurist it may be in great measure or entirely cured in time. Unfortunately, such is not the sequence of all these cases, for frequently audition will remain imperfect throughout life, in spite of the most perfect after-treatment. Hearing power being thus permanently dis-

abled, future usefulness and enjoyments are likewise greatly lessened. In a few and rather exceptional instances, hearing becomes progressively worse, and among the very poor and ignorant it may be entirely lost. In the latter class are found those who have been treated empirically or not at all. The result is woful, as the inmates of our deaf and dumb asylums can testify.

Diagnosis.—Upon direct examination of the nasal fossæ, we find on one, or more frequently on both sides, a large red mass, which is evidently attached to the outer wall of the fossæ and which almost, if not quite, touches the septum narium by its inner aspect. Such tumors are not to be confounded with mucous nasal polypi, which are of lighter color and ordinarily pedunculated. If we make use of a probe, we cannot limit their base which forms part of the soft tissues covering the turbinated bones, and upon pressure, while the probe will sink in slightly, it will soon be arrested by the solid bone beneath;* and yet these two very different morbid changes are often confounded one with the other. No doubt this is dependent, not so much upon their actual visible appearances, which are so different even to a somewhat inexpert eye, as to the fact that many of the rational symptoms are similar with both. Both, for example, are aggravated under somewhat similar circumstances, and especially is it true when the atmosphere is cold and humid. There are important differential signs over and beyond the mere aspect. In the first place, hypertrophy of the soft tissues inside the nose is ordinarily bilateral, whereas the mucous polypus or polypi exist more frequently in one cavity. Again, if a mucous polypus obstruct one side of the nose and the healthy side be closed entirely by pressure with the finger, breathing through the nose is absolutely prevented. In the other affection, if the same experiment be tried as above, namely, pressure be made on one side of the nose while an effort to breathe through the other side is exerted, the result will be accomplished, although with some difficulty and with the noise peculiar to partial stoppage. If the mouth be tight shut, in this latter case, while the patient is breathing solely through the nasal passages, but a short time will elapse before the patient is compelled again to open his mouth, on account of an insufficient supply of air reaching the lungs, and the beginning of unpleasant symptoms

* Delavan points out (*loc. cit.*) that, in the living, actual hypertrophy of the bone may be readily diagnosed by sounding, as it were, the enlarged mass by a fine needle, and observing the depth at which the point is arrested. Dr. W. J. Walsham, who quotes (*Lancet*, December 29, 1883) this statement of Delavan, has met with occasional specimens of it in the dissecting-rooms, but has not yet been able to demonstrate an actual hypertrophy in any patient during life.

of slight asphyxia. There is something very like, as Duplay remarks, to what occurs with the wearer of a tracheotomy tube of such small calibre as to incompletely satisfy the needs of the system for a full supply of air. The confusion between a fibrous polypus and the condition we are considering might occur were we merely to look at the color of the tumors, which in both cases is very similar. But a fibrous polypus is usually one-sided, whereas hypertrophy of the soft tissues is habitually bilateral. As to almost all other symptoms, they are very dissimilar. With deviation of the nasal septum there can be no possible error, if it be observed whether or not the tumor is attached to the outer or inner wall of the fossa. The inclination of the septum is nine times in ten toward the left, so that with a tumor in the right fossa we have an additional sign of differential diagnosis.

Complications.—It is the rule to find the nasal septum deviated to the opposite side in all cases of true hypertrophy of the turbinated bone. It seems, however, that the hypertrophy is consequent upon the deviation, and not the deviation upon the hypertrophy (Delavan).

Frequently, moreover, the nasal passage which is apparently dilated is actually obstructed by a hypertrophy of one of the turbinated bodies.

Among other complications of this disease we should lay special emphasis upon nightmare and asthmatic attacks. The former is only too frequent with children who have the nose obstructed, and just as excision of enlarged tonsils will permit an infant or older child to sleep quietly, so will the effective treatment of this disease, in other cases, effect the same result. Many of the German authors cite the attacks of asthma which are the direct consequence of continued obstruction of the nasal passages, and I have every reason to believe they are correct.

The first observation of this kind is credited by Voltolini to Fraenkel in 1871. Eight years later, William Porter published three analogous cases in the *New York Medical Record*, and some additional ones in the *Archives of Laryngology*, 1882. Fraenkel's paper on the relation of nasal diseases to asthma appeared in 1881.* A few other instances, more or less similar in character, have been published during the past few years by Daly, Spencer, Rumbold, Todd, Mulhall, and Macini. †

Latterly, also, B. Fraenkel presented a patient to the Medical Society of Berlin, ‡ in whom facial spasms which had existed during four years, in spite of different kinds of remedial treat-

* Berl. klin. Wochenschr., Nos. 16 and 17.

† Boston Medical and Surgical Journal, July 31, 1884, p. 110.

‡ Stated meeting June 11, 1884.

ment, were completely arrested by a few applications of the galvano-cautery to the inflamed and thickened nasal mucous membrane. In commenting upon this interesting case, Fraenkel directed attention to the fact of irritation of the pituitary membrane giving rise to reflex action which might occasion severe dyspnoea. Reflex neuroses, therefore, of nasal origin, as is shown, have now been observed by himself and others, many times.

This is still further corroborated by the dependence of so-called "hay-fever" upon naso-pharyngeal catarrh, which was first referred to, in a forcible manner, by Dr. Daly, of Pittsburg, in 1882, although it would appear that Dr. Edson had not completely ignored this pathological relation when we read his letter to the *New York Medical Record*, in 1878. Since Dr. Daly wrote his article, Dr. Roe, of Rochester, has published some favorable results in the treatment of this disease by operative procedures directed against the condition of hypertrophy existing in the nasal fossæ. Hack, also, holds that morbid conditions of the nasal membrane play an important rôle in its etiology, and Harrison Allen goes so far as to state that nasal obstruction is the *sole* important factor, and that the cure simply consists in its removal. Dr. J. N. Mackenzie, while admitting that certain states of the nasal passages are necessary to the production of a paroxysm (not always, however, well-defined local disease), adds that in a number of cases, such conditions are brought about by abnormal excitability of the naso-motor centres. From the adoption of this view he reasonably affirms that proper treatment consists, *first*, in diminishing the reflex excitability of the turbinated tissue; or, failing in that, *second*, the partial or complete destruction of the tissue itself.*

It is also now a familiar fact that irritations of the nasal passages, especially of the erectile tissue of the posterior portion of the lower turbinated bones, will excite a spasmotic cough. In a similar manner it has been recently shown by Dr. Charles H. Burnett, that catarrhal conditions of the nose and naso-pharynx are at times the efficient cause of reflex aural phenomena, which may assume the character of clonic spasms of the velum palate, accompanied by objective noises in and from the ear.† These noises are heard by the patient himself, and perceived at some distance by a listener. The muscular spasms are in some instances easily excited by talking, owing to the fact that the genio-hyo-glossus muscle is connected by its fibres with some of those of the superior constrictor of the pharynx. The objective

* A Contribution to the Study of *Coryza Vasomotoria Periodica*, etc. *New York Medical Record*, July 19, 1884.

† *Medical News*, July 26, 1884.

snapping noises in the ear can be cured by properly directed treatment to the nares and naso-pharynx.

It is probable, too, that when nasal hypertrophy is permitted to exist for a long while without effectual efforts to relieve it, dilatations of some of the air-cells will be produced and an emphysematous condition of the lungs be present. This emphysema in itself becomes a sufficient cause of the asthmatic attacks. A child who has this affection of the nasal passages has a very characteristic countenance. The nose is somewhat flattened at times, the mouth habitually held agape, and the face has a vacant and silly appearance. There is little doubt too, that nutrition is interfered with on account of insufficient air, or of air with deleterious properties. Air which passes through the nasal passages before entering the lungs is rendered more equal in temperature, more moist, and is freed from injurious particles of dust or other substances floating in it. When breathing is carried on through the mouth, the air is drier, unequal in temperature, and contains much that is eminently fitted to occasion irritation of the throat, larynx, and bronchial tubes, and thus to set up acute or chronic troubles of all these delicate and highly organized structures. Marked hyperidrosis, in a case of obstruction of one nasal fossa, has been observed on the affected side. When the occlusion was removed the hyperidrosis diminished. It was explained by Zachenberg* as being caused by reflex action proceeding from the nerves of the nasal fossæ. The *duration* of this disease is practically without limitation, in our climate, if left to itself, when once it reaches a certain stage of advancement. I have never known a case to get well without treatment, although I have known very many to get much worse by ill-advised and wrong therapeutical methods. If such person be transported to a warm, equable, and soothing climate, I can understand that he may be greatly benefited; but whenever sudden changes of temperature take place, with much humidity ever present in the atmosphere, no such termination should be looked for. I am inclined to the belief, also, that this hypertrophy of soft tissues of the nasal passages, if permitted to remain for a long period of time unrelieved, will gradually but surely lead to all the consequences mentioned in the preceding description, which are: loss of smell and hearing, blunted taste, chronic throat and bronchial affections, stunted growth, and generally impaired nutrition.

Etiology.—In many instances I attribute hypertrophy of the submucous tissue covering the turbinated bones to a pernicious method of treatment. In others, even more numerous, anterior

* *Journal de Méd. de Bruxelles*, May, 1880.

attacks of acute coryza will have occasioned it to a moderate degree. If, however, I discover this condition to exist to an exaggerated extent, especially among adults, my ordinary experience assures me that it is due in part to a mischievous therapeutic method previously adopted. It is then, properly, considered as an accidental complication, and not a normal sequel of the primary affection. I am strengthened in my belief, because I encounter very many cases of chronic coryza where respiration through the nasal passages is relatively free and undisturbed. Moreover, patients suffering from excessive obstruction in the nose have usually been treated during months and years by the repeated application of douches, injections, or sprays to the Schneiderian membrane. These all act in a very similar, though more or less injurious manner. By their contact the mucous membrane is irritated again and again. The first effect of this irritation is to cause the capillaries to contract and exude a certain amount of serous fluid. For a time (from a few moments to several hours) the patient breathes more easily through the nose. This benefit, unfortunately, is but temporary, and, after a brief period, the pituitary membrane again becomes turgescent and angry-looking, and the secondary consequence is serous or plastic infiltration of the mucous and submucous tissues.

When catarrh of the nose is of late date, these results follow one another very rapidly; when it is already of long standing, they take a longer time to manifest themselves. The reason of this is evident to all who are familiar with the structures covering the turbinated bones. If the nasal passages become almost completely blocked up, in consequence of this irrational treatment, the damaging effects are already begun, if the results are not entirely accomplished. The drum-heads are sunken, the ossicles are trammelled in their movements, and there is a notable vacuum in the tympanic cavity. The barrier to the passage of air through the nose, during normal respiration, becomes almost impenetrable; every effort of deglutition sucks out a portion of residual air from the middle ear, and ultimately the non-balanced external pressure upon the membrana tympani furnishes us with some of the familiar symptoms of subacute aural catarrh. Possibly turgescence, or collapse of erectile tissue in this region, and more particularly over the inferior turbinated bones, is under dependence of the vaso-motor nerves which are here distributed, and are, as we know, very sensitive to external impressions. They will undoubtedly react, in this place as elsewhere, to all kinds of irritants, mechanical or otherwise, and they will also be influenced more or less by the emotional sentiments. Thus I am able to explain how it is that an inflammatory occlusion of the nose may change place rapidly

from one cavity to another. This quick shifting state is proximately brought about by a greater or less amount of functional activity in the smooth muscular fibres which form a component part of the trabeculæ and walls of the closely juxtaposed cavities, and this activity is finally attributable to nerve-filaments in a hypersensitive condition. The stimulus itself of these peripheral nerves may be either of direct or of reflex origin, and cold hands or cold feet may cause obstruction of the nasal passages as effectually and rapidly as an irritant locally applied.

Treatment. — Under the head of prophylactic treatment, I would strongly emphasize the importance of not allowing what is regarded as an innocent attack of acute coryza to run its course unchecked. It is wise to use the remedial agents already spoken of in a previous chapter, in order to bring acute coryza to a speedy and favorable termination. In this way permanent thickening of the soft tissues of the nose and its after consequences are avoided. The more frequently attacks of acute coryza recur, the more likely it is that hypertrophy will follow. Therefore, all efficient causes of cold should be avoided, and all the good habits I have referred to in the chapter on prophylaxis, etc., should be strictly and systematically adhered to. It is evident to my mind that, if a clear appreciation of the facts which have been previously narrated were generally possessed by practitioners and patients, the unfortunate sequences of hypertrophy of soft tissues in the nose would rarely be deemed inevitable.

Proper and judicious treatment of this condition in its initial stage should be inaugurated and would render it improbable that the specialist need be called upon to combat it at its ultimate period. In order to carry out such treatment, the nasal douche must be banished absolutely from the physician's store-house of resources. He must learn to look upon it, in nine cases out of ten, where it is persistently used, as being sure to occasion the troubles that we wish most to avoid. Even medicated sprays, in my experience, are not curative, except in a very limited measure. Their frequent and prolonged use appears to increase rather than to diminish the obstruction against which we are fighting. Occasionally employed, say once every day, or every other day, when there is considerable dryness of the mucous linings, or when a certain amount of inspissated secretion adheres to the pituitary membrane, and in places is removed with great difficulty by blowing the nose, they are of decided benefit. In other instances, and when these conditions do not exist, their advantage may be temporary, but it does not last. Too frequently they merely render the nasal passages more pervious for a short time, which again become in a few short hours as

much occluded as before the spray was tried. The spray of anthoxanthum odoratum and the one already mentioned of carbolic acid, soda, borax, etc., are the two which have done me the best service in the treatment of hypertrophy of the soft tissues covering the turbinated bones. The tincture of anthoxanthum odoratum may be purchased in certain large homœopathic pharmacies, such as Boericke & Tafel's, New York. I have used it in the proportion of ten to twenty drops to the ounce of water in an ordinary hard-rubber spray-producer. It causes slight stinging pain, at first, of the pituitary membrane, but in a few moments the disagreeable sensations disappear, and the nasal passages are rendered more permeable. In a few rare instances, I have seen, or known it to afford considerable relief, which was more or less lasting. I am informed by a relative who purchased and tried it for the first time in London, that it is there advertised in some of the homœopathic drug-stores as a specific for so-called catarrh.

Metallic sprays of sulphate of copper and zinc, of nitrate of silver, of bichloride of mercury, etc., are painful, unless employed in very weak solution. They often occasion severe headache, which will last several hours. I have frequently known them to occasion all the symptoms of an attack of acute coryza, accompanied by much pain, sneezing, and a large amount of thick, yellowish discharge from the nasal cavities, but have not observed any decided curative results from their employment. In this disease, their use is, therefore, not to be encouraged. In the commencement of this affection, astringent or alterative powders are of far more value in remedying the local condition. By themselves, when blown through the nasal passages every day, or every other day, for several weeks or months, they will render them sufficiently patulous for quiet breathing. Frequently I blow them through the nose both anteriorly and posteriorly with good effect. This is true, particularly, when any catarrhal inflammation of the naso-pharyngeal space is present. Besides the powders mentioned in the last chapter, the following may be advantageously employed :

B. Pulv. iodoformi 3 ij.
Pulv. acid. tannici gr. v.
Pulv. acaciae ad $\frac{1}{3}$ ss.

M., fiat pulvis et S.—To be used with the powder-blower.

B. Hydrarg. chloridi mitis gr. xv.
Hydrarg. oxidi rubri gr. ij.-v.
Sacchari $\frac{1}{3}$ ss.

M., fiat pulvis et S.—To be used with the powder-blower.

- B. Hydrarg. ammoniati gr. x.-xx.
 Pulv. altheæ $\frac{3}{5}$ i.
 M., fiat pulvis et S.—To be used with the powder-blower.

When powders prove of no avail, I have made use, with temporary advantage, of belladonna, white precipitate, and cubeb ointments introduced into the nose by means of a camel's-hair brush, or better still, by Bosworth's nasal applicator (Fig. 65), and have also found some benefit at times from repeated pencillings with iodine, gtt. x. to xx.; tinct. opii., gtt. xv.; and glycerine, $\frac{3}{5}$ i.- $\frac{3}{4}$ ij. In many cases, latterly, an ointment of iodoform and vaseline ($\frac{3}{5}$ i.- $\frac{3}{4}$ i.) has been very useful in allaying a feeling of irritation and stuffiness in the anterior nasal passages, when other applications of different kinds have proved to be of little value. With scarcely an exception, every patient who has employed this ointment, night and morning, or merely at bedtime, has been benefited. There are some who have declined to continue its trial on account of the objectionable odor. This may be partially corrected by camphor, tannin, etc., but not wholly suppressed. The iodoform ointment recommended by me is in my experience superior to the use of iodoform employed in the form of a saturated ethereal solution, as advised first by Elsberg. I have found that the latter application produces local irritation. At one time I tried to ascertain what might be effected by introducing prepared sponges or laminaria digitata into the nasal passages. Both of these substances became much swollen, and they certainly expanded the passages themselves by direct pressure upon the soft tissues, but their presence became exceedingly painful after a few hours, and more than once, owing to their swelling unequally, there was some difficulty in removing them. After they had been removed, the patient undoubtedly breathed, for a little while, better than he had done before their introduction. But in a few days, the obstruction was again as great as ever, and after a few trials with each patient, I thought it advisable to abandon their use. The use of tents of laminaria, and sponge, as a means of dilating and medicating the nasal passages, is highly thought of by Justi.* He has given special directions as to their size, their manner of introduction, and the time they should be allowed to remain in the nose. Even now, I sometimes make use, in my office, of soft metallic bougies which are bent almost at right angles and of suitable length to pass through the nasal passages. One of them may then be slowly introduced through the lower or middle meatus until it causes gagging by its further extremity touching the pharyngeal wall. It should then be withdrawn slightly and

held in position four or five minutes, or until the passages have become decidedly dilated. We can now make a much more thorough application of powder to the nasal passages, by means of our anterior hard-rubber powder-blower attached to the cylinder of compressed air, than we could do without having passed the metallic bougie as a preliminary measure. Of course, if there be a deviation of the septum, we shall have to bend the metallic bougie, so as to accommodate it to the changed direction of the meatus. Again if the first bougie introduced does not pass easily, we should not use much pressure, but withdraw it and try another one of smaller calibre. I believe the use of these soft metallic bougies in New York City is due in the first instance to Dr. Clinton Wagner. After making use of the metallic bougies, or even without this preliminary step, I have often had very encouraging results from the introduction into the nasal passages of soft gelatine bougies medicated with sulphate of zinc and belladonna. The gelatine bougies which I have employed are precisely like those employed in the treatment of gleet. I believe those first made use of in Germany had a somewhat different shape. In a couple of hours the covering, which can be dissolved, is entirely liquefied, and what remains of the bougie comes away on the handkerchief, or falls into the pharynx and can be expectorated. These gelatine bougies are not painful, they bring the astringent into direct contact with the diseased membrane for a considerable time, and the results achieved by their employment are sometimes excellent.

In the event of the preceding local medical means proving inefficient to produce cure, or at least great amelioration after thorough trial, we should direct attention toward operative procedures. Different methods of surgical treatment have been lauded, at different periods, and by different distinguished surgeons.

They all resolve themselves into treatment—

1. By the *hypodermic method*: In a certain proportion of cases, treated by the hypodermic injection of ergotin, Dr. T. Amory De Blois claims to have had, at least, partial success. The use of ergotin in this manner is based upon the theory that in diminishing the vascular supply of the thickened and inflamed pituitary membrane, we may cause it to shrink, and at the same time diminish the amount of secretion from it. It is especially adapted to cases which are unsuitable for Jarvis' operation, by reason of a relatively slight degree of hypertrophy; it is not indicated for children, inasmuch as it might produce unpleasant constitutional disturbance. The pain and hemorrhage resulting from these injections, though always slight, is sufficient to deter

many patients from allowing them to be repeated several times. The formula employed by Dr. De Blois is :

B. Ergotin.....	III. xv.
Glycerine.....	3 v.
Aqua.....	3 xi.
M. et S.—For hypodermic injection.	

A hypodermic syringe with a long, straight, or somewhat curved needle is employed. The injections should be made, when practicable, over the site of greatest tumefaction, although it would appear that in order to obtain good effects from the treatment this is not always essential.*

2. By cauterization.

3. By cutting, or tearing away redundant soft tissues.

In the first category I would mention the topical application of fused nitrate of silver to the soft tissues over the turbinated bones, as strongly recommended by Schrötter. Schrötter uses a special instrument, in making these applications, of which the figure is here given (Fig. 60). It will be seen that there is a long, na-



FIG. 60.—Instrument for Cauterizing the Pituitary Membrane (Schrötter).

row, somewhat deep receptacle, which extends one-half the entire length of this instrument, for the fused nitrate of silver. During the introduction of this instrument into the nose, the caustic is completely concealed, by means of a turning plate which covers it over. When it has been properly and sufficiently introduced into the nose, the caustic surface of the instrument is exposed and kept in contact a few seconds with the mucous membrane of the inferior or middle turbinated bone, and after turning the instrument somewhat, so that the caustic may touch a wide surface, this is again concealed by means of the sliding piece and the instrument is withdrawn. Schrötter speaks very confidently of the success which has followed these applications. In my hands, with a less perfect method of application, nitrate of silver has failed to do what is required of it. It has not cauterized deeply enough, and has allowed the opposing surfaces to come together again after the withdrawal of the instrument.

This has led to superficial cauterization of the septum, and often the elimination of the sloughs has led to partial adhesions

* Archives of Laryngology, vol. iv., No. 1, p. 20.

between the thickened membrane over the turbinated bones and that covering the septum. This has occurred despite repeated and careful plugging of the nasal passages with scraps of lint immersed in sweet oil and assiduous care to prevent such trouble. Perhaps if I had neutralized the action of the nitrate immediately by the injection of a strong solution of common salt into the nasal passages, I would have prevented the formation of ad-

Ahesions, which I was compelled to tear asunder several times, within a week or two after the operation. The galvano-caustic knife has been strongly recommended during the last few years in the treatment of this disease. The results obtained by Michel, of Bonn, are the most

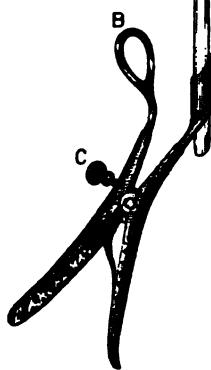


FIG. 61.—1. Shurly's Nasal Speculum.

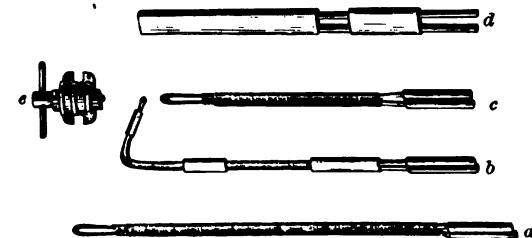


FIG. 61.—2. Shurly's Electrodes.

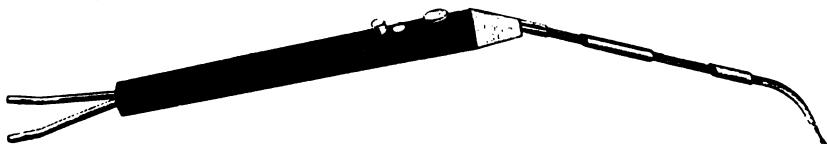


FIG. 61.—3. Shurly's Handle with Pharyngeal Electrode.

Description of Electrodes and Speculum.

FIG. 61.—1. Nasal Speculum (self-holding). A, the ivory plate which slides in blade of the instrument; B, outside blade for keeping back ali nasi; C, set-screw for maintaining desired degree of dilatation.

FIG. 61.—2. a, Straight long electrode for passing through to posterior nares; b, post-pharyngeal electrode; c, short straight electrode for applying to anterior parts of nasal passage; d, two small cylinders enclosed in ivory, through which wire passes in snaring tumors, etc.; e, windlass to be used with above, which can be attached or detached at will from the handle.

FIG. 61.—3. Handle with pharyngeal electrode to which any of these electrodes can be attached.

remarkable. Unfortunately, this gentleman, while speaking of his wonderful and numerous cures, does not give accurate details of his method of procedure. Besides, he has the misfortune, in my estimation, to speak of the cure by this means of nasal catarrh, when he can only mean the cure of a frequent complication of it, *i.e.*, hypertrophy of the soft tissues over the turbinated bones. Several American practitioners of note, however, have fully tested the use of the galvano-caustic wire or

knife in removing these redundant tissues, and thus giving a free passage to nasal respiration. At a session of the American Laryngological Association, Dr. Shurly presented some ingenious electrodes devised for this purpose, and also spoke of his great success in their use. Dr. Shurly employs a very simple, ingenious, and, at the same time, efficient ivory protector for the nasal septum during his cauterizations. Figures of these instruments, with descriptive text, thanks to his courtesy, may be seen on the preceding page.

In a note addressed to me September 9, 1879, Dr. Shurly writes as follows : "I have used lately, in a few operations upon the pharyngeal tonsil, an electrode formed of bent platinum wire (No. 19 or 20). It has the advantage of being bent at any angle or length to suit the case." Dr. William H. Duncan, of New York, corroborated strongly the experience of Dr. Shurly by his own excellent results in the use of the galvano-cautery for the efficient cauterization of the hypertrophied tissues of the nasal cavities, but prefers a curved handle to a straight one, because he is thus enabled to make a rhinoscopic examination with his right hand, while holding the electrode with the left hand (or *vice versa*) in the nasal passage being operated upon, without his view of the naso-pharyngeal space being obstructed. Dr. Duncan has also found that, by covering his electrodes directly with asbestos, except, of course, at the platinum end, he prevents the outer covering of silk from being burned through during each caustic application, and the hot wire coming into direct contact with surrounding tissues. A set of electrodes has just been made for me by Tiemann & Co., in which the asbestos and silk have an outer covering of glass to prevent them from wearing away so soon. While this is in one respect an improvement, it does not permit the electrodes to be bent at all, after being made, without causing the glass covering to fall off. Further, instead of using a curved handle, my electrodes are bent twice at a right angle near the proximate extremities. Since writing what precedes, Dr. Shurly's paper has appeared in the number of the *St. Louis Medical and Surgical Journal* for January 5, 1880. From it I have transcribed the following description of his nasal speculum, his manner of employing it, etc. : "It is composed of two parallel limbs, connected by a joint near their centre, similar to the Elsberg speculum. At the nasal extremity one limb is finished into a fenestrated blade for holding out the ala, and the other into a slot-like blade, into which slides a concavo-convex plate of ivory, about two inches long by about one-half inch wide. The handles (which are short) are held separated and the blades in apposition by a small intervening spring, while the blades are separated by means of a small

thumb-screw. It should be introduced with the blades in apposition and the ivory shield pulled out. Then, after pushing the shield gently in along the septum to the required depth, the blades may be separated and the cartilaginous nose dilated to the required width by means of the small thumb-screw. Now the cautery electrode may be introduced along the ivory plate as a guide, the current turned on, and the diseased membrane destroyed to the required depth and extent; or, after the plan of Michel, several fine lines may be drawn across a given spot at one introduction." Hitherto the galvano-cautery has been found somewhat difficult to manipulate successfully within the nasal cavities, and unless extreme care has been taken, there has been great risk of cauterizing contiguous parts. With the improved protector of Shurly, which is less clumsy, and therefore superior to Browne's, of London, there is no such danger. If the galvano-cautery be now properly and skilfully used, its work is effectual, and the cicatrix broad enough to produce by its contraction a sufficient opening through the nasal fossa for the accomplishment of normal function.

Dr. D. H. Goodwillie, of New York, has modified the thermo-cautery of Paquelin so that it may be conveniently and effectually applied through a glass protector, of funnel-shape* (Fig. 62), to the anterior portion of the hypertrophied turbinate bones. The important modification consists mainly of a shorter handle, a narrower and smaller platinum point, and its adaptation to a compressed air-receiver instead of being kept heated by the intermittent and fatiguing compression of a hand-ball. The handle should be held between the index and middle fingers of the right hand, the thumb being employed, by pressure upon the rubber tubing, to regulate the quantity of air which passes into the hollow platinum point, and thus, also, the degree of temperature to which the heated "POINT" attains. In some instances, it is a saving of time, trouble, and expense to make use of the thermo-cautery (Fig. 63) in preference to the galvano-caustic wire or knife.

A method of cauterization by means of fuming nitric acid, made known to me by my friend, Dr. Andrew H. Smith, of New York, may be described as follows: An ordinary large-sized, hard-rubber Eustachian catheter, straightened at its further ex-



FIG. 62.—Funnel-shaped Glass Nasal Protector (Goodwillie).

* I have had made for myself different forms of these glass specula besides those made use of by Dr. Goodwillie. One of the most advantageous is made with a straight narrow plate, slightly hollowed out on the outer side, and intended to protect the nasal septum from the heated platina knife. This plate is attached at its outer extremity to a wide pavilion, so that the nares are protected during the withdrawal from the nose of the straight heated electrode.

tremity and bent toward its pavilion, is slit on one side and then dilated. Into the groove thus formed an ordinary steel cotton-holder, around whose small rough extremity a suitable piece of absorbent cotton is twisted, is introduced a short distance. Then, by means of a glass rod, or piece of wood, a few drops of the acid are carefully applied to the exposed surface of the cotton, and the catheter is pushed gently, after greasing it (through a hard-rubber ear speculum retained in the nostril to be operated upon), into the nasal fossa through the space between the lower turbinated bone and the septum, as far back as the pharyngeal wall. It is then slightly withdrawn and the cotton-holder pushed home. After a few seconds the cotton-holder is



FIG. 62.—Modification of Paquelin's Thermo-cautery (Goodwillie).

brought by traction out of the fossa. Another cotton-holder which has been immersed in a paste of bicarbonate of soda and water, is now quickly passed along the grooved Eustachian catheter, so as to neutralize any excessive cauterizing effects of the acid application. The instrument of Dr. Smith has been slightly modified, in one or two particulars, by myself. The further end is closed at present by a plate of hard rubber, so as to prevent possible cauterization of the pharynx, and the proximate

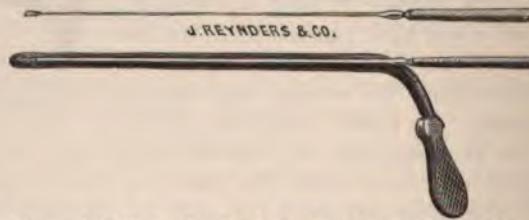


FIG. 64.—Smith's Grooved Catheter for Cauterization of the Nasal Mucous Membrane by means of Fuming Nitric Acid.

extremity has been provided with a more substantial handle. The figure (64) shows one of these instruments. I have performed this operation on several occasion with the happiest results, and in these instances, before the operation was undertaken, other remedial means had proved almost useless. Nitric acid may also be effectually applied, in many instances, by simply wrap-

ping the end of a small probe with absorbent cotton, and, after saturating it with the acid and pressing out any excess of it, by drawing it along the swollen turbinate bone.

Whenever cauterization by means of nitric acid seems unnecessarily severe, we may substitute for it, with very happy results at times, the use of glacial acetic acid, as first recommended by Dr. F. H. Bosworth. Applications of this agent can be readily made by wrapping the flattened distal extremity of the probe (Fig. 65) with cotton-wool, then dipping this end into



FIG. 65.—Probe for Applying Acetic Acid to the Turbinated Bodies (Bosworth).

the acid and rapidly carrying it through the nose. If, however, we wish to limit the cauterization to the turbinate bone, then only one side of the covered probe is charged with the acid, while the other should be coated with vaseline. The pain of this application is quite sharp for a few moments, but does not last long, and may be immediately neutralized by using a spray of a saturated solution of bicarbonate of soda. The application may be renewed in a few days if required. Generally, six or eight applications are sufficient to cure a moderate case of hypertrophy of the soft tissues. Subsequent to the application, the nasal mucous membrane becomes temporarily swollen, and, after twenty-four or forty-eight hours, there is an exfoliation of tissue under the form of shreds of whitish membrane. Rarely have I seen any ulcerative condition produced by this procedure. The acetic acid acts, evidently, by its strong affinity for epithelial cells, and "seems to control morbid activity in the deeper layers of the membrane." After the hypertrophic tissue has been reduced by the acid, Sajous allows a couple of weeks to elapse without treatment, except a cleansing douche night and morning, and then insufflates a powder composed of iodoform and tannin, equal parts, or applies an ointment composed as follows:

R. Morphiæ sulph	gr. iv.
Acidi tannici,	
Iodoform.....	aa 3 ss.
Ungt. simpl	5 ss.
M. et fiat ungt.	

Sajous refers to twenty-five cases, treated in this manner, with the best results.

Instead of making use of different methods of cauterization,

Dr. William C. Jarvis, of New York, prefers to cut off the infiltrated and redundant soft tissues covering the turbinated bones, by means of a wire noose.* This he accomplishes readily and very successfully with an ingenious instrument (Fig. 66) of his own invention, which may be described as follows: It consists of a small straight canula seven inches in length, which can be partially bent in different directions, and used as a probe. The exterior surface of two-thirds the length of the canula is smooth, the other third has a screw-thread upon it. Over this latter portion, another canula with smooth outer surface, but somewhat larger in calibre and grooved inside to prevent circular movement, is passed. At its proximate extremity, there are two small retention pins in metal. Upon the screw-thread a milled button is fixed, by turning which it gradually runs up the thread and pushes before it the movable canula. The double wire is drawn

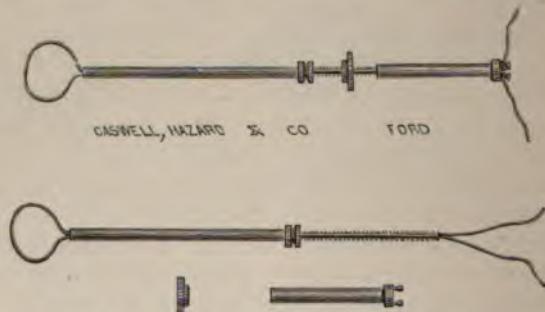


FIG. 66.—Wire-snare Nasal Ecraseur (Jarvis).

through the first canula from end to end, leaving a noose of any desired size at its distal extremity, while at the other extremity the two ends of the wire should be twisted firmly around the retention pins. The wire noose may be retained in any position, after the proper dimensions are given to it, by flattening it out slightly on either side against the extremity of the canula, and by making one or more turns of the milled button. Dr. Jarvis claims for his instrument, and I believe with much reason: *First*, simplicity; *second*, practical and easy manipulation. By its use he has already taken away, with but slight pain or hemorrhage, masses of thickened soft tissues which completely blocked up the nasal fossæ and rendered the breathing through them almost impossible. The instrument, of which I have just given the description, may be employed in the treatment of hy-

* The adoption of the snare as an instrument for the removal of nasal growths dates back to 1805, when Robertson published an account of the use of his instrument in the Edinburgh Medical Journal. Since that time it has been variously modified by Wilde, Hilton, Blake, and Zaufal, until finally Jarvis' instrument was perfected.

peretrophied tissues over the turbinated bones, situated in the lower portion of the nasal passages, as far back as the posterior border of the septum. Frequently, it is found, in the use of the écraseur, that the precise moment is unknown at which entire division of the tissues, encircled by the wire loop, takes place. For this reason, unnecessary hemorrhage occasionally occurs, owing to withdrawal of the instrument from the nose too soon. In order to obviate this difficulty Jarvis has had a snare constructed in which (Fig. 67) "a series of markings, representing as many millimetres, engraved upon the smooth flat surface of the main canula, will serve to indicate the moment when complete section has taken place. After a loop has been formed, and just before proceeding with the operation, withdraw the outer tube until the tip of the loop is on a level with the orifice of the main canula. Note the relation the distal extremity of the outer canula bears to the figures in the scale; a little beyond this point will be that indicating complete section of the growth. This arrangement will also enable the operator to measure the dimensions of various growths, for by noting the relation the movable canula bears to the figures on the scale, at the moment slight tension indicates that the loop has been made evenly to encircle the growth, its measurements can be easily read off in millimetres." *

In the introduction of the snare the distribution of the fifth nerve should be borne in mind, and it should be carried along the floor of the nasal fossa, close to the inferior portion of the septum and not allowed to come into contact with the external wall more than is necessary. The facility of passing the loop is thus increased and the production of reflex sensations and painful phenomena avoided. If the nasal passages be much obstructed, preliminary dilatation, by means of rubber bougies, will facilitate the passage of the loop. The adjustment of the wire is occasionally facilitated by a device recommended by Dr. J. N. Mackenzie. It consists in tying a rubber cord, by one end, to the loop, the other end being passed through the fossa and brought out through the mouth. The snare is then introduced into the pharynx. By pulling the cord downward and outward the wire is bent and carried over the growth. The mass is now divided by fixing the wire tightly upon it and slowly turning the milled nut (Fig. 68).



FIG. 67.—Jarvis' Improved Snare.

When the hypertrophied tissue to be removed is situated ~~far~~ back near the posterior nares, its removal is aided occasionally, by transfixing the soft tissues by one of Jarvis' long needles ~~slightly curved at the distal extremity before applying the loop~~ of the snare. The accurate use of the needle, after this manner, is only possible when the anterior and middle portion of the affected nasal passage is relatively unobstructed. In all cases of hypertrophied soft tissues covering the turbinated bone, where the snare is employed, it is judicious *not to snare rapidly*. One, or several hours, is required to complete the operation. The time which is essential is, in a measure, dependent upon the size of the growth and, more or less, upon its vascularity. It should, however, be remembered that the turbinated tissue is invariably vascular, traversed by underlying large venous sinuses which, if cut through too rapidly, will remain open and give rise to severe hemorrhage. Even after passing one hour in cutting through a case of posterior hypertrophy over the lower turbinated bone, I was obliged, in view of the considerable amount of the nasal hemorrhage subsequent to it, to introduce a posterior plug by means of a Steele's soft metallic probe, in order to arrest it effectually. ~~In~~

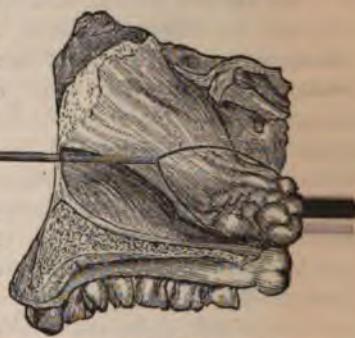


FIG. 68.—Posterior Hypertrophy of the Lower Turbinated Body, with Jarvis' Snare in Position to Remove It. (From a specimen in the possession of Dr. Jarvis.)



FIG. 69.—Jarvis' Transfixing Needles.

some cases, where we have reason to expect considerable bleeding by reason of the size or nature of the growth, it is well to pass a cord in advance through the nasal passage of the affected side, and allow it to remain until the operation is completed, so that a tampon can be immediately drawn back into the posterior nares if required.

* These needles are manufactured by Mr. Ford, of New York, in four different sizes, running from one to four inches in length. Each number has a straight needle and three others of varying curves. They are all furnished with a convenient handle.

Dr. Jarvis believes that, in a certain degree, we may foretell hemorrhage, after division with the snare, if we consider carefully the color and configuration of the growth. The posterior hypertrophies, which are smooth and of relatively light color—resembling indeed the surrounding mucous membrane—are not likely to bleed profusely. Those, on the contrary, which are markedly mammillated and of a bluish-black coloration, should be divided very slowly, as otherwise excessive loss of blood will occur. In such cases, even after division of the growth, hemorrhage may sometimes be avoided by carrying out the suggestion of Bosworth, to allow the divided tissues to remain in contact with the wound for a day, or over night. By the method of slow traction in the use of the snare, considerable pain can be prevented. The patient himself may be directed to turn the milled nut at short intervals of time, and his movements may be regu-



FIG. 70.—Jarvis' Rhinoscopic Mirror and Tongue-depressor.

lated by the relation of a fixed scale, marked on it, to the shank of the écraseur. The bleeding after snaring off anterior nasal hypertrophies can readily be arrested by direct plugging anteriorly, combined rarely, in very severe cases, with lateral pressure by means of the fingers, or some suitable form of clamp, resembling, more or less, the one used by Adams to straighten a deviated septum. An operation on posterior nasal hypertrophy, is facilitated very much by using Jarvis' combined tongue-depressor and rhinoscopic mirror. This instrument (Fig. 70) may be described as follows: "If the shaft of an ordinary laryngoscopic mirror should be made to diverge for about an inch, to meet again, however, and form a small ring, it would resemble the tongue-depressor part of this instrument. A mirror is hinged upon this ring. The hinge-joint will permit the mirror to be fixed at the most favorable angle for viewing the posterior nares, and at the same time facilitate even depression of the tongue."

When this instrument is placed in proper position so as to bring the posterior nares into sight, it may be held in one hand, while the other hand is wholly occupied in adjusting the wire loop of the écraseur around the hypertrophied mass, prior to its removal. Two steel clips, for retaining cord tape around the palate, and thus doing away with the awkward procedure of tying the ends of the tape, can also be used with advantage.

The clips themselves are V-shaped springs,

"so arranged that the tape, passing through apertures in their blades, is caught by a tooth-like projection and firmly held. Pressure on the spring releases the catch and sets the tapes free. One of the clips is provided with a rest for the écraseur." The accompanying figure shows very clearly the instrument described, and the snare in position during the operation for removal of post-inferior turbinate hypertrophy. Tying up the palate is only essential when the patient is easily affected with

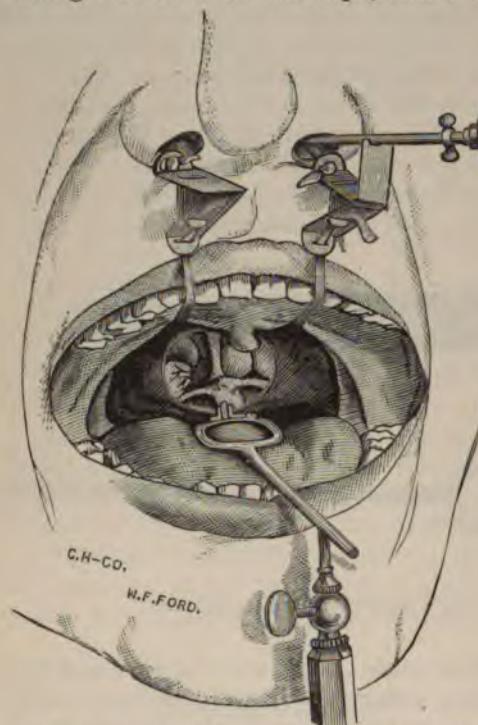


FIG. 71.—Jarvis' Palate-retractor, Rhinoscopic Mirror, and Snare, in Position during Operation for Removal of Posterior Hypertrophy.

gagging. If this effort occur, a cord should first be passed by means of Bosworth's carrier, and then it is a very simple matter to supply its place with the rubber tape. One end of the tape is knotted so as to be retained by one slit of the steel clip, and the other end is passed through the other two slits, and held in place by the tooth of the cross-bar. The tension of the palate can be regulated by a nice adjustment of the lower end of the tape. After the removal of the posterior hypertrophy the wounded surface heals readily. The freedom of nasal respiration is at once increased, and the nasal discharges rapidly diminish in quantity. The cure is often complete

and permanent. If, however, some discharge from the nose remains, after entire cicatrization, it can be treated efficaciously by means of sprays, or powders, which can now be projected into the nose easily and thoroughly. There is little doubt, however, that, in these cases, the enlarged turbinate bodies occasioned and kept up the catarrhal discharge by pressure on adjacent parts, and when these portions are removed, the main cause and seat of the disease will be destroyed.

A new wire snare-écraseur, devised by Dr. Sajous, possesses, it seems to me, certain advantages over that of Jarvis. To decide whether Sajous' snare acts on a new principle, or whether it is simply a modification of the well-known instrument invented by Dr. Jarvis, I leave to others to determine. It is claimed that it is simple in construction and easy of manipulation. It consists (Fig. 72) of five pieces: two cylindrical tubes, two rods, and a milled nut. The two tubes are made of steel and of different sizes. The narrower one is threaded, at one end, to fit tightly in that of the larger tube. The two rods are also of different sizes, their diameters allowing their introduction into the tubes, the cavities of which they fill, and along which they can move freely. The end rod is furnished with a needle-eye. The larger rod is threaded, throughout its entire length, for the movement over its surface of a milled nut. This nut lies at the posterior end of the large tube, and when revolved from left to right, causes the rod to descend.

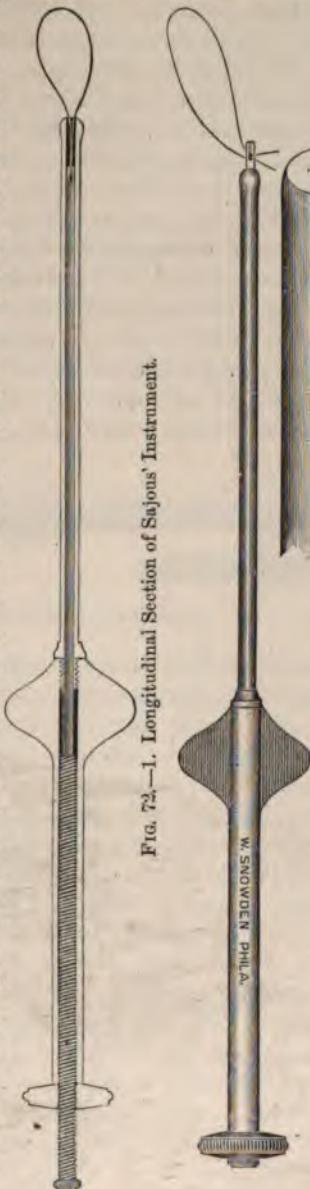


FIG. 72.—1. Longitudinal Section of Sajous' Instrument.



FIG. 72.—3. Magnified End of the Needle-rod.



FIG. 72.—2. Its Exterior Appearance.

In Jarvis' *écraseur*, the wire must be passed throughout the entire extent of the tubes, a rather lengthy and sometimes difficult procedure, especially if the inside of the instrument be a little rusty. In Sajous' instrument, but a small piece of wire is needed, which is doubled into a loop, and the ends passed a short distance through the eye. Traction being then caused by turning the milled nut, the end of the rod will disappear in the tube, doubling the wire ends on the loop. For operations in the pharyngeal vault, there is a curved end which can be attached to the narrow tube. In certain cases of hypertrophy of the soft tissues, covering the middle and inferior turbinated bones, the canula-scissors of Dr. A. H. Smith (Fig. 73) may serve a useful purpose. The instrument is thus described by the author: "It consists essentially of two canulæ with close rounded ends, one canula revolving within the other. One-half of the circumference of each canula is cut away for the distance of one inch and a half from the distal extremity, on a line somewhat slanting.



FIG. 73.—Canula-scissors (Smith).

The cut edges of the outer canula are brought to a knife-edge, while those of the inner canula are finely serrated. This part of the inner and outer canulæ, respectively, represents the two blades of the scissors. When the inner canula is so placed that it corresponds with the outer one the scissors are open; when it is turned half round the scissors are closed. The slant given to the cutting edges insures a scissors action. At the opposite end, the inner tube projects beyond the outer one, and is furnished with a milled head, by which it is revolved. The instrument is introduced into the nose open, that is to say, with the inner blade lying in the concavity of the outer one, and the open side is pressed firmly against the part to be removed. Whatever tissue is contained in the hollow of the inner blade is cut off when a half turn is given to the milled head. The removal of hypertrophied tissue from the turbinated body by this method is followed by hemorrhage, which may be profuse, but is usually easily controlled. The results in cases of obstinate catarrh are often extremely satisfactory."

It is evident that as a result of this operation, and so soon as the denuded surface has healed, a longitudinal cicatrix will form, extending along the inner aspect of the turbinated body which has been operated upon. Owing to the contraction o

this cicatricial tissue the nasal passage is rendered more per-
vious, and hence the freedom of nasal respiration is increased.

Evulsion of the mucous membrane is a second method of surgical cure. Gross speaks of tearing away the redundant mucous lining, and, if necessary, the middle turbinated bone itself. I formerly considered this as the readiest and most effectual method of accomplishing a radical cure. One case in which I made use of it, within a year, makes me urge caution in its adoption, since the after-effects of pain and swelling of the face on the side operated upon, with great pain and soreness, followed by abundant discharges from the nasal fossæ, were such as to be a source of considerable anxiety to me during many days. A suitable instrument for the performance of evulsion had been for a long while a desideratum with me. With this end in view, I had thought of various instruments which might

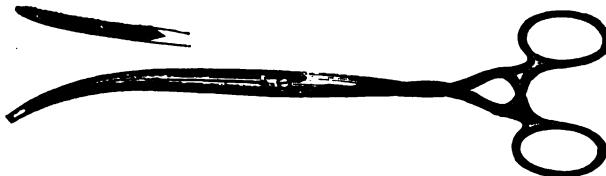


FIG. 74.—*Forceps for Removing Hypertrophied Mucous Membrane.*

fully meet apparent indications. After a time, the simple one represented in the accompanying wood-cut (Fig. 74) was made for me, and, in four operations in which it has been employed, the result has been signally beneficial to the patient. The jaws of the forceps (which should be made heavier than they are drawn) are grooved in the centre and serrated on the edges, and, for this reason, better adapted to catching hold of and retaining in their grasp the infiltrated mucous covering. When a firm hold is had of the pituitary membrane, after the introduction of the forceps, it is essential to twist them once or twice on their long axis, ever holding them tightly shut, before withdrawing them. Rarely do we then fail to accomplish the tearing away of a fairly large strip of the lining membrane of the nose. There is usually a sudden and rather large loss of blood after this procedure, but in a few moments, under the influence of cold injections, it will entirely cease and need not occasion the slightest alarm. It is well, however, after washing out the nasal fossæ, to plug them for a day or two with oiled lint, and thus be assured that the inflammatory swelling of the parts will be kept down. One operation will not usually suffice, and we shall be obliged to recur a second or even a third time to the use of the forceps. But as it is only moderately painful, and the after-bleeding is useful by

depleting the diseased parts, I see no reason why it should ~~not~~ be repeated. Of course, timid patients dread this, as they would any other surgical operation. In such cases, we may with propriety give small doses of ether by inhalation, before practising evulsion. The operation as described has in its favor the fact that it, or some very similar one, will lead to ultimate recovery in cases of excessive increase of the tissue of the turbinate bodies. Both Dr. Bosworth and Dr. Mackenzie have characterized this operation as "severe," or recommend other methods "simpler, less painful, and more efficient."

In reply to these objections, I would say that there are many practitioners to-day who neither own an electric cautery, nor are sufficiently expert to make the snare practically useful. To such colleagues, I still recommend the forceps as a method of procedure which is not so good, usually, as the two others in the hands of a skilled manipulator, but may yet at times be found serviceable.

General treatment.—In regard to internal treatment, I have little to add to what was said when speaking of chronic coryza. At times, it is a useful adjunct, when judiciously given with due consideration of the diathetic condition, and it is, probably, of less obvious benefit in advanced hypertrophy of the soft tissues of the turbinate bodies than it is in simple chronic coryza, where the thickening is very moderate. I attribute this lack of influence of internal medication to the fact that the soft tissues of the nose have become much less capable of being influenced by remedies, which can only affect them through their vascular supply, or by the instrumentality of glandular secretions, which are in these cases much altered.

NOTE.—Read at the foot of page 107, after the words "with the best results," as follows:

In Drs. D. Bryson Delavan's and G. A. Spalding's experience, monochloracetic acid is a more efficient cauterizing agent, for hypertrophied turbinate bodies, than glacial acetic acid. Indeed, a thorough application of the former acid, although not very painful, *usually* destroys the redundant tissue sufficiently to give entire relief to obstructed nasal respiration due to this cause. When this acid is applied to the pituitary membrane, by means of a suitable probe wrapped with absorbent cotton, the first effect is to puff it up very much, so that the turbinate body has somewhat the aspect of a gelatinous polyp. At the expiration of from three to five days, an extensive, superficial, white slough separates, by which time the ulcer beneath has healed considerably, and the freedom of nasal respiration is much increased. Unless attention be directed to it, the white slough may be confounded with nasal mucus, consequent upon an attack of acute coryza. The parts cauterized may be left absolutely alone until the slough comes away, but at that time any slight adhesions should be prevented, for a few days, by appropriate local treatment. My own experience in the use of mono-chloracetic acid has, hitherto, been limited to a few cases, but, so far as it extends, it fully corroborates the statements of Dr. Delavan and Dr. Spalding.

CHAPTER IX.

FOLLICULAR DISEASE OF THE NASO-PHARYNGEAL SPACE (POST-NASAL CATARRH).

THIS disease has been the subject of much thought and investigation to every practitioner who has devoted himself to the study of throat affections. By some, post-nasal catarrh is merely considered to be a more or less chronic inflammatory condition of the naso-pharynx. In many patients it appears to be the result of a propagation backward of a simple chronic coryza, or upward of a simple chronic pharyngitis. A few physicians recognize that it is the same disease as follicular disease of the pharynx, differing from the latter only by its localization and certain special symptoms, which are due to its location. The reasons why this last-named, and correct, view of the disease is not generally adopted would seem to be : *First*, because the symptoms of follicular disease of the naso-pharyngeal space, at times, manifest themselves when the patient has not been conscious of previous throat disease ; *second*, because, in some cases, there is no follicular disease of the middle and lower pharynx ; *third*, because, without doubt, frequent attacks of acute coryza, which occasion simple chronic coryza, also tend to produce chronic inflammatory disease of the follicles of the naso-pharyngeal space. In reply to this I would state that the symptoms, results of treatment, and analogy with special morbid conditions of the laryngo-bronchial and stomacho-intestinal tracts, sustain the conviction, *first*, that catarrh of the post-nasal passages is merely a local determination of a diathetic condition ; *second*, that it is essentially the same condition as chronic follicular disease of the throat and remaining portion of the air-passages. Anatomical researches have been rarely attempted in this disease, mainly because of the difficulty of reaching the diseased parts, and also owing to the fact that this affection never directly causes death. Whenever patients have died of intercurrent disease, acute or chronic, the latter predominates, and little or no attention is paid to the investigation of the primary affection ; so we find that our knowledge of this special catarrhal trouble is necessarily imperfect, and if we have not, as yet, a

universally accepted belief of where the seat and what the nature of the malady really is, our dearth of pathological knowledge will afford a partial explanation. In regard to the interpretation of this disease, it can also be affirmed that general pathology has been much ignored. Everywhere we find an evident desire to localize the agencies which are at work, and to limit their action and effects to some particular tissue or organ.

This is especially true of post-nasal catarrh ; for, without much regard to attendant circumstances, its presence is frequently explained by the influence of agents acting topically. It is, then, very naturally considered to be the offspring, as it were, of a reunion of accidental conditions, affecting one or more individuals of a number.

When, however, a disease becomes wide-spread, and affects a very large number of individuals, such an interpretation is inadequate, and we are obliged to recur to some special climateric or atmospheric influence, capable of being its efficient cause. This we accept already for many diseases, and most readily for those which are liable to become epidemic, extending themselves over large tracts of country, and attacking people of all sexes, ages, and conditions, after a similar manner. This belief still remains, though numerous and accurate investigations with respect to the state of the prevailing atmosphere have not, as yet, discovered the contagium or infectious principle. Much of what precedes has a direct application to the study of follicular disease of the naso-pharyngeal space, as will be recognized further on, while considering, more particularly, the etiology of this affection.

Physical characters.—Frequently, upon rhinoscopic examination of the posterior nares and vault of the pharynx, we find the entire surface abnormally red, thus giving evidence of an increased capillary circulation. This is true of robust subjects, and when the disease is not yet of long standing. If, however, we compare the coloration posteriorly with that existing in the anterior nares, we shall ordinarily find the pituitary membrane redder in front than it is behind. As Browne remarks, this is no doubt due to the fact that there is in this region less submucous infiltration, on account of the intimate attachments of the mucous membrane to the solid structure beneath. But there is not always increased redness of the mucous membrane in the naso-pharyngeal space ; for, sometimes, it is pale and dull-looking, and is evidence of the condition of general anaemia which exists. Phthisical and scrofulous subjects are generally thus affected, but it may be found with simple imperfect nutrition. Usually the mucous membrane is notably thickened, and a certain amount of submucous infiltration exists. This latter condition is

apt to extend itself, and affect the palate and pillars of the fauces. When it is very apparent on either or both sides of the septum narium posteriorly, it gives a special appearance of this region, which has been described as a separate disease (Fig. 75). If the mucous membrane and the submucous layer of the posterior extremities of the turbinate bodies are also thickened, the meatuses will occasionally become almost occluded. Not only is the mucous covering thickened, but the glandular hyper-development is very marked. The glands of the naso-pharyngeal space are continually excited to increased function by the presence of abnormal secretion, and are not long in becoming obviously hypertrophied, as may be recognized with the rhinoscopic mirror (Fig. 76). In the majority of cases, the hypertrophic glandular condition is limited to the vault of the pharynx in its median portion, but it is no uncommon circumstance to

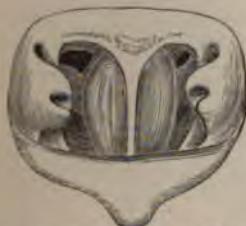


FIG. 75.—Rhinoscopic Image of Oedema of the Nasal Septum (Cohen).



FIG. 76.—Glandular Hypertrophy at the Vault of the Pharynx with Thickening of the Soft Tissues of the Posterior Nasal Septum (Browne).

find it developed also upon the lateral walls around the Eustachian orifices, upon the superior and posterior surface of the soft palate, and also giving a mammillary aspect to the turbinate bodies themselves. Even then, however, the most considerable morbid changes are situated on or about the median portion of the basilar process. Although the employment of the rhinoscopic mirror will give us the best idea of the nature, number, size, and distinctive appearances of these enlarged and diseased glands, still examination by means of the index-finger should not be omitted. Occasionally, by passing this finger gently behind the palate, we can experience a rough mammillary sensation, as that of Russian leather, which is attributable to the condition described, and which alone may permit us to make a diagnosis. It requires a very submissive patient and an accurate touch to diagnosticate after this manner any but much advanced stages of disease. The submucous infiltration of the side of the vomer might also be thus made out, but there would be many

failures without the use of the rhinoscopic mirror. In very old cases of naso-pharyngeal follicular disease, the mucous membrane becomes much atrophied, the hyper-glandular development subsides, and there is diminished secretion from the affected regions. In this variety we are apt to have a somewhat glazed, dry appearance of the pharyngeal wall, which extends itself, sooner or later, into the median portion of the pharynx. Ulcerations in the naso-pharyngeal space, upon the septum, or turbinate bodies rarely exist except in syphilitic or strumous subjects; and when they do, their description, march, and complications properly belong to ulcerous coryza. I have seen, however, several times, a grayish aspect of the posterior extremity of one or more turbinate bodies which has deceived me for awhile, and made me believe in the existence of *ulcerations* where none in

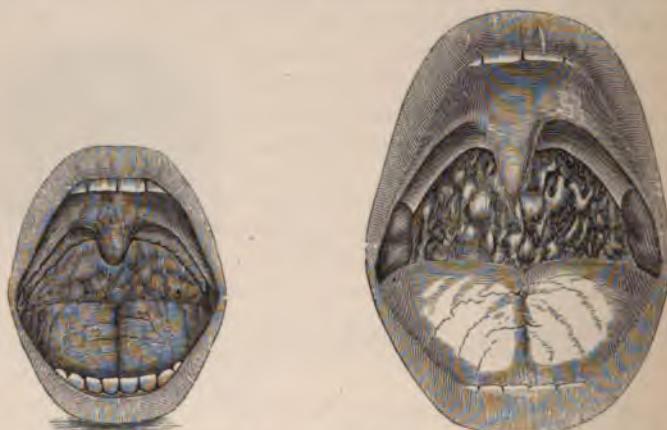


FIG. 77.—Follicular Pharyngitis (Cohen).

FIG. 78.—Follicular Pharyngitis at a More Advanced Stage (Cohen).

reality existed, as the progress of the case conclusively showed. Sometimes we can see small ecchymoses upon or within the mucous membrane. Inspissated mucus is often found blocking up the Eustachian orifices, or filling the neighboring depressions. The lesions of follicular disease of the pharynx often accompany those just described, and we have numerous granulations with depressed mucus-covered interspaces, all over the posterior pharyngeal wall (Figs. 77 and 78). Besides, there are many enlarged and tortuous vessels, winding over the infiltrated and inflamed surface of the pharynx, pillars of the fauces, etc. The aspect of the former is often mottled, although of a predominating slate color, owing to the varied hue of its granulations.

Symptoms.—Follicular disease of the naso-pharyngeal space

is characterized by two constant symptoms : *First*, a sensation of stuffiness, or oppressive fulness in the superior and posterior portion of the nasal passages ; *second*, the falling down from above the palate and from the posterior nares of a greater or less quantity of mucus, which, according to the age, extent, and severity of the disease, may also vary in physical characters. It may consist of small, starchy pellets or masses of viscid, tenacious, and almost colorless secretion, without odor, which are surrounded by a foamy, aërated expectoration ; or of larger, heavier, yellow, or greenish, mussel-like conglomerations of an essentially muco-purulent nature. All other symptoms (and their name is legion) generally attributed to post-nasal catarrh, may or may not be present, and at all events are, certainly, never pathognomonic of it. The symptom stuffiness is without doubt occasioned in great part by the presence of the sputa just mentioned, though it is frequently aggravated or rendered more intolerable by concomitant hypertrophy of the turbinate bodies. At times, masses of morbid secretion are seen trickling slowly down the post-pharyngeal wall. These become visible by simple inspection, when the mouth is moderately distended. In less advanced stages, in order to render their existence apparent, it is necessary to make use of the rhinoscopic mirror. We shall then perceive them as they hang down from the fornix or roof of the vault, or from the superior limit of the septum, or the posterior nares, and somewhat resembling stalactites, suspended from the roof and walls of a subterranean grotto. The outline of these parts is partially obscured, or almost hidden from view, and the posterior nares themselves are in part blocked up. This is carried to such an extent, in certain instances, that it is with some difficulty we comprehend how respiration is carried on through the nasal passages. Surely, in these examples there is little or no difficulty in convincing ourselves of the essential feature of the disease, or indeed of the main source of the unpleasant sensations experienced.

These masses of mucus, or of muco-pus, at first contain a certain quantity of watery fluid, and are of semi-solid consistency. They are then less adherent to the adjacent parts, and if they do not separate themselves from them little by little, and fall down into the median portion of the throat, they may be roughly torn away from their attachments by one or more efforts of hawking.

After a longer or shorter period of time, usually, however, when the disease has been in existence and uncared-for during several years, the masses of mucus or muco-pus become hardened, concrete, and inspissated while still in contact with the mucous membrane. Moreover, the membrane itself having lost in a

great measure its normal amount of sensibility, the patient becomes less aware of, or disturbed by, their continued presence. Active efforts are not made to detach and expel them when first formed, and they go on accumulating upon their primitive seat. Having this fact in view, it is very easy to account for their hardening. Remaining *in situ* for quite a period of time, or, estimated roughly, from twenty-four hours to several days, they lose their watery constituents—and this is effected by the evaporation which takes place, due to the frequent passage of the inspired and expired air through the nasal cavities. This hardening process is not the only evil attendant upon their remaining in place. These masses take on a bad odor, become fetid and most offensive to taste and smell. The repulsive odor is a result of decomposition, and can only be relieved by a long-continued course of appropriate treatment, of which the disinfectants are the main class of agents to be employed. Again, the hardened masses of mucus finally act like foreign bodies of an irritating nature, which have remained for a considerable time in contact with an organized and sensitive membrane. They are apt to increase a chronic inflammatory process already present, and unless removed, will eventually, and surely produce abrasion, and in rare cases (syphilitic, strumous, etc.) this abrasion of tissue will be an onward step toward ulcerative degeneration and necrosis.

There are frequent occasions, although the *masses* of morbid secretion are visible, by the aid of the rhinoscopic mirror, in the naso-pharyngeal space, when the patient is unable to hawk them into the back of his throat, so as to be able to spit them out, no matter what and how great his efforts are. Then it is only after drinking or gargling the throat with some warm or bland fluid, that the glandular secretion is increased so rapidly, and with such good effect, that relatively old secretions are separated from the parts to which they were previously adherent, and fall into a region where they are under the dominion of the voluntary muscles, and from which they can be altogether and quickly expelled. The mucous or muco-purulent secretion is the product, to a great extent, of the glandular follicles situated at the vault, on the lateral walls of the upper portion of the pharynx, also on both sides of the posterior border of the septum, and on the posterior extremities of the turbinate bodies. At times, and in small proportion, it would seem that the glands situated in the posterior ethmoidal cells gave rise to a certain amount of the morbid secretion, as is evinced in a measure by the falling down of stringy mucus behind the palate, more especially when the patient is in the dorsal decubitus. For this reason, we often hear patients complain of their inability to

sleep comfortably, owing to masses of thick phlegm which fall into their throat, cause choking sensations, and render it necessary for them to sit up quickly and make repeated efforts of hawking until they are able to clear their throat by expectoration of a quantity of thick mucus.

CASE.—Not long ago I was called to see a boy of six years of age, with the following symptoms : During the day the boy was to all appearances perfectly well, except perhaps a slight, stuffy feeling in the nose. He would go to bed each night at seven or eight o'clock and sleep quietly until two A.M. At that hour he would awaken suddenly with great distress of breathing, seem as if he were about to strangle, and have repeated, hoarse cough. After fifteen or twenty minutes all became quiet and the child went to sleep again.

I found that these attacks were due to a mass of inspissated mucus, which became fixed in the naso-pharyngeal space, and before it could be detached, caused the above distressing symptoms. When the separated phlegm was either expectorated or swallowed, immediate relief was obtained. Many sufferers are unable to talk for any great length of time, as during a dinner-party or evening entertainment, without being compelled to clear the throat repeatedly. I have known ladies so much annoyed by this unpleasant condition that they preferred to remain at home rather than to go out, and be subjected to what was to them a very mortifying circumstance. In public places, churches, theatres, meetings, in the street, or at home, an individual who is tormented with an aggravated form of post-nasal catarrh is continually obliged to scrape his throat and expectorate. No sooner is one pellet of mucus spat out than another takes its place, so that persons thus affected are not only sufferers themselves, but also cause, at times, great annoyance to those about them. No doubt this symptom of hawking is to a certain extent increased by a bad habit acquired, and that the irritation occasioned by their repeated efforts will augment the irritation of the naso-pharynx, so that a greater quantity of mucus is secreted. Still this *symptom* cannot be wholly avoided by the strongest desire to do so, and must be considered, in part, a necessity. Inasmuch as histological research informs us that the ethmoidal sinuses contain very few mucous follicles, even though we may admit that these become or are diseased, we cannot admit that their existence and diseased condition would be sufficient to explain the amount of mucus secreted, unless the other follicles already mentioned have also a share, and a much more important one, in occasioning the disagreeable symptoms of the dis-

ease. If, as is often the case, the sense of obstruction is located by the patient's subjective sensations, in the middle and anterior portions of the nasal passages, it proceeds probably, in great part, from moderate temporary or permanent infiltration of the mucous or sub-mucous layers. Professor Allen has proven conclusively * how important a factor in the production of many of the special symptoms of this form of catarrh, nasal obstruction is. It is essential that there should be free nasal respiration, in order that the nose may perform properly its functions. If a sufficient column of air cannot traverse freely the nasal passages, sooner or later, incomplete anosmia, pent up and inspissated secretions, with constant congestion and distress follow. It has been shown, † also, how frequently nasal deformities occur between the ages of seventeen and eighteen, and with what probability they give rise to nasal catarrh, so common at that time of life. A quantity of inspissated mucus in masses or crusts may, however, augment obstruction, and forcible blowing of the nose will then bring some alleviation for a time to the patient's unpleasant sensations. Rarely, in an uncomplicated case of post-nasal catarrh, does one observe more than a moderate quantity of altered nasal secretions in what the patient blows from his nose. This is to be accounted for by the fact, that the glandular follicles of the pituitary membrane, properly speaking, do not secrete in this affection nearly so much viscid mucus as those which are situated in the posterior regions.

It is not infrequent to find more or less intense headache as an accompaniment of post-nasal catarrh. When this affection is limited to the naso-pharyngeal space, the pain of the head is limited to the occipital region. When, however, the disease is complicated with chronic rhinitis, affecting the middle and anterior portions of the nasal passages, the headache is frontal as to its seat, and is supposed to indicate, when fixed at the root of the nose or over the *inner* aspect of the eyebrows, an inflammatory extension to the frontal sinuses. In my experience, this frontal headache, when it is very intense, has usually been determined by bad methods of treatment. Occasionally the *odor* of the expired breath is nauseous in the extreme. These are not the ordinary cases; for, while many individuals, suffering from post-nasal catarrh of moderate intensity, will have a certain amount of disagreeable odor in their expired breath in the morning on rising, or after a prolonged fast, it is rarely so offensive as they suppose, and, unless one is conversing with them in very close proximity, it is not really notice-

* American Journal of the Medical Sciences, January, 1880.

† Philadelphia Medical Times, No. 314, 1879.

le. Ladies, especially, suffer morally very much more from the belief, under such circumstances, that their breath is foul, and that they have become unpleasant on this account to their friends, or to persons living in the same room with them. As far as may be possible and truthful, it is only right to relieve the minds of such patients, because otherwise they become often times excessively morbid and hypochondriacal. Moreover, we have therapeutic means which are capable of making this symptom disappear, and to which I shall refer under the head of Treatment.

Other frequent symptoms of naso-pharyngeal catarrh are those which are frequently attributed to atonic dyspepsia, *i.e.*, bad taste in the mouth, furred tongue, loss of appetite, etc. I do not mean to affirm, that dyspepsia does not frequently precede, accompany, or, indeed, aggravate an existing chronic catarrh of the naso-pharyngeal space; for, of the contrary I am well assured. I believe it is very important, however, for all practitioners to keep in mind, that there is no more frequent sufficient cause of many dyspeptic symptoms—in fact, of dyspepsia itself, with its one and a thousand ills and disagreeable features—than the disease I am considering, and it is only by the judicious treatment in such examples of the catarrhal condition of the naso-pharynx, that we are able finally to conquer completely the dyspepsia. Occasionally, patients have the greatest difficulty in hawking down the inspissated mucus which has accumulated in, and become very adherent to, the vault of the pharynx. This occurs most frequently in the morning shortly after rising. Time and again I have known a patient's efforts to expectorate these hardened secretions become so great as to occasion actual vomiting of very distressing character. Under like circumstances it is not unusual to find the hardened secretions from the pharyngeal vault streaked with blood or bearing a strong resemblance to the sputa of an individual affected with pneumonia. Certain patients do not expectorate frequently or abundantly. From time to time, however, at regular intervals (sometimes every day, every other day, after the lapse of a week or more), suddenly without provocation, a hard, brownish or greenish fetid mass of inspissated mucus, epithelium, pus, blood, etc., detaches itself from the fornix, and soon produces a choking sensation by its further descent into the pharynx. Violent and repeated efforts of blowing, hawking, and coughing are made, and finally, after a few moments, usually, the offensive mass is expectorated from the mouth, to the great relief of the sufferer. These hardened secretions frequently have the configuration of the parts from which they have become separated, *i.e.*, fossæ of Rosenmüller, the pavilions of the Eustachian tubes,

depressions at the vault of the pharynx, posterior extremities of the turbinated bodies, etc.

Complications.—Hypertrophy of the soft tissues which cover the turbinated bodies, when it is considerable or excessive, is no ~~less~~, in my opinion, a condition which belongs to the usual march of post-nasal catarrh. It should, on the contrary, be estimated as a sequel or complication, which is frequently due to the catarrh, frequently also, though not always, brought on by faulty and pernicious methods of treatment. It is, likewise, one which lends additional trouble and gravity to the follicular affection of the naso-pharyngeal space. Just as its anatomical seat and conditions are unlike, so its cure must be attempted after a somewhat different plan. Whenever the portion of the pituitary membrane, covering the middle and anterior portions of the septum and turbinated bodies, becomes so much thickened as to produce contact between these boundary walls of the fossæ, *mutual compression* may become sufficient to obliterate almost completely the external orifices of the follicles, and thus to diminish or cut off altogether the outflow of glandular secretion. No doubt, therefore, the sensations of dryness which old catarrhal patients have is accentuated in part owing to this fact, and also by the blocking up of the nasal ducts, which prevents the tears from flowing by them into the nasal fossæ, and thus effecting their lubricating influence. This obstruction of the nasal ducts is usually occasioned by the propagation of the catarrhal inflammation to them from the pituitary membrane. Unfortunately there are frequent instances in which it does not arrest its onward march here, but extends itself through the lachrymal sac to the palpebral and ocular conjunctiva. I am satisfied that this mode of origin of many cases of conjunctivitis is ignored, and as a consequence no attention is paid, by the oculist, to the treatment of the pituitary membrane, which, if properly carried out as an adjunct to direct ocular applications, would undoubtedly lessen the duration and intensity of such cases. In speaking of hypertrophy of the turbinated bodies, I have insisted upon its injurious effects upon the hearing-power of many persons. It is unfortunately true, moreover, that follicular disease of the naso-pharynx, even though it be unassociated with any notable degree of hypertrophy of the turbinated bodies, may also lead to serious impairment of hearing.

In certain instances, the glandular enlargement involves the proximity of the Eustachian orifices, finally ends by implicating these openings themselves, and more or less completely blocking up their calibre. In more numerous examples, it would appear as if the subacute or chronic aural catarrh, which follows in the wake of chronic follicular disease of the naso-pharyngeal

space, were merely the direct result of the propagation of the catarrhal inflammation through the Eustachian tubes into the middle ear. According to Tröltzsch, it occasions slight paralysis of the dilator muscles of the Eustachian orifices. At first the patient has only now and then some uneasy sensations, in one or other ear, which impel him to introduce his little finger in the external meatus and endeavor to get rid of a foreign body ; a little later the power of distinguishing certain tones or sounds is diminished, and the patient has become slightly deaf. If, under these circumstances, the ears be occasionally inflated with a Politzer's bag, and at the same time the naso pharynx is properly medicated, no further trouble need be apprehended, and the patient will get almost, if not entirely, well, so far as impairment of hearing is concerned. If this condition is permitted to remain without such treatment, the future is dark indeed, for he will slowly, though surely, become irremediably deaf. Fortunately such sad instances are rarely met with, as most persons, nowadays, prefer to seek special medical advice before such results have occurred.

Occasionally, catarrhal inflammation of the nasal passages extends to the antrum of Highmore, and gives rise to a most offensive muco-purulent discharge. This discharge is intermittent in character, and has periods of exacerbation. It is particularly observed when the patient is lying in one or other lateral decubitus. At these times a small, or considerable, flow will come from the anterior naris of the affected side. There may or may not be slight pain and local tenderness over the diseased cavity. The discharge from the antrum may, however, take place through its orifice in the daytime, if it contain a large quantity of mucus or muco-pus, and it then flows into the nasal fossa, even though the patient be in an erect posture. In cases in which there is slight obstruction, and consequently no long retention of fluid, the odor of the antral discharge may not be offensive. Sometimes, the inflammatory changes seem to be but an extension of disease from the nasal fossæ ; again, they are evidently caused by a carious tooth.

Nothing is more frequent, as we know, than to find concomitant lesions of follicular pharyngitis, which is either the origin or propagation downward of the follicular disease of the nasopharyngeal space. Then we can perceive, by direct examination of the throat with the unaided vision, granulations, in a more or less marked degree, frequently, wedged in places by dilated varicose veins, either on the pharynx, um, pillars of the fauces, tonsils, or in fact upon all these parts. Sometimes, these small glistening bodies are no larger than the head of an ordinary pin, and resemble so many minute vesicles of herpes cov-

ered over with a coating of thick mucus, of a somewhat grayish color, or else with a foamy, aërated, spumous secretion, less viscid and of whitish tinge, like that which comes from the bronchial tubes at the commencement of an acute inflammation of these latter structures. I have seen these glistening bodies, especially when limited to the organs above mentioned, and of small size, without concomitant trouble in the naso-pharyngeal space ; or in the mucous lining of the inferior portion of the pharynx, or of the larynx itself. Frequently, however, these granulations appear to be but the continuation of a more or less similar condition, which exists in even an exaggerated degree above the soft palate. They are then very much enlarged and of different shapes, rounded, oval, oblong in a vertical direction, etc. Accompanying the morbid condition of the pharyngeal follicles we frequently have a considerable degree of elongation and infiltration of the uvula, which is a constant source of uneasy sensations of different kinds, *i.e.*, tickling in the throat, sensation of a foreign body, which the patient is endeavoring from time to time to rid himself of by an effort of deglutition, etc. Moreover, this elongated uvula is very apt to repose on the base of the tongue, particularly when the patient is in a reclining position, and to produce obstinate cough, which is sometimes only effectually arrested by the removal of a portion of it. The pillars of the fauces are infiltrated, thickened, and relaxed, and between them, on either side, we find, oftentimes, a somewhat enlarged, spongy-looking tonsil, dotted here and there with white points, which are the visible evidence of cheesy deposits within the lacunæ. Such tonsils keep up a morbid condition of the throat and naso-pharynx, and, in order to be cured, require repeated cauterizations with nitrate of silver fused upon the end of an aluminum probe, and introduced into the lacunæ, either before or after partial excision of their mass.

Chronic follicular disease of the naso-pharyngeal space may occasion dysphonia, when the condition of the larynx cannot account for imperfect speech. This impairment of the voice has been notably benefited by active treatment of the naso-pharyngeal space, without any attention, in the way of therapeutics, being directed to the vocal organ. Such a case I have reported in the January number of the *American Journal of the Medical Sciences* for 1876. The result in this case proved the correctness of the belief I had formed, that the trunks of the pneumogastric nerves, adjacent to the pharyngeal walls in their superioreservent, were involved by propagation of the chronic inflammatory processes accompanying follicular disease, so evidently existing in the neighboring parts. Thus we perceive that, in chronic follicular disease of the naso-pharyn-

geal space, the voice may be and is affected at times, when no visible structural lesion exists within the larynx itself. This morbid influence may depend upon chronic hyperæmia of the nerve-trunks.

It has been remarked by Dr. Bosworth, that there is a very close relationship between hyperæmic affections of the larynx and the existence of nasal catarrhal conditions. This belief has come to him mainly through his observation that, so long as he merely treated the larynx, he obtained poor curative results. Now that he gives more attention to treatment of the nasal cavities and less to the larynx, his patients get well sooner. There can be little doubt, also, that the integrity of the nasal chambers is essential, in the great majority of cases, to the production and continuance of a good singing voice. If nasal catarrh continues, or if occlusion in these passages takes place from any cause, laryngitis will, sooner or later, become developed, and with it deficient vocal power. The development of the laryngitis may be explained in two ways: first, by the falling of irritating mucus from the post-nasal space into the pharynx and larynx; second, by the mouth-breathing, especially during the night, when cold air, laden with impurities, is drawn into the air-passages constantly, without being properly moistened and cleansed by passing first through the nasal fossæ. The influence upon the singing voice will be greater when an obstruction is seated in the posterior nares; it will also be more marked when it is considerable, or when the nasal cavities are of unusually small dimensions. Still there are individual differences which should always be considered, and some persons there are whose singing voice is not evidently affected by physical conditions of the nose, which in others would cause marked loss of vocal function, as shown by altered tone or shortened compass. The obvious deductions from these remarks are to treat systematically and carefully all diseases or defects of the nasal organs, which manifestly are the efficient factor in causing hoarseness, cough, laryngeal irritation, or impaired vocal power. It is not, however, judicious to interfere with these conditions too soon for the *mere* purpose of helping the singing voice, unless the consequences of their presence have already, in some degree, thus proved themselves detrimental. If, however, these nasal affections have in other ways proved to be annoying, or pernicious, we should unquestionably treat them judiciously and by the most approved methods, and in so doing, not infrequently, we shall be gratified to find ultimately that, as *they* are improved, or cured, the singing voice of the patient is, also, strengthened, or the *quality* of tone made better and the compass increased, even though the *tone* has been somewhat altered.

Dr. Elsberg has "noticed that the subjects of rhino-pharyngeal disease, especially in case of considerable congestion and thickening of the mucous membrane, suffer peculiarly from loss of memory, and mental depression." Besides these, a number of other morbid conditions are shown to be due to nasal affections. Such are : 1, Chorea ; 2, reflex epilepsy ; 3, neuralgia, especially supra-orbital headache, migraine ; 4, gastric disturbances ; 5, uterine disorders ; 6, diffuse external redness of the nose dependent upon chronic nasal catarrh ; 7, retarded development, etc., etc.

The intimate vascular and nervous relations of the pituitary membrane and the brain are pointed out by Dr. Jacobi in a recent communication to the New York Obstetrical Society, and will account for the connection between cerebral affections and those of the nasal mucous membrane.

Of course, catarrhal patients, like other patients, may have *ulcerations* of the septum, turbinated bones, and fornix ; but we must then always be on the lookout for other distinct evidences of constitutional syphilitic poisoning, of profound strumous cachexia, or poisoning from the virus of glanders, or the long-continued absorption of some injurious substance, inorganic or vegetable. Vegetations, polypi, tumors of divers sorts may take rise from different points of the pituitary membrane. Never should these outgrowths or heterogeneous productions of tissue be regarded as forming part of the normal march of follicular disease of the naso-pharynx. They are always and invariably complications, the diagnosis of which should be made separately and with all the accuracy possible ; for, they will often give rise to symptoms somewhat similar to those of the simple follicular affection, and are frequently, through ignorance or want of attention, confounded with it.

Duration, termination, prognosis.—Follicular disease of the naso-pharyngeal space is essentially a chronic affection. Once firmly seated in the mucous membrane lining this cavity, it holds itself there with great tenacity. It shows no tendency whatsoever to get well of itself, in the majority of instances. Although it is true that, with a vigorous constitution and attention to the general hygienic indications, upon which so much emphasis has already been laid in one of the preceding chapters of this work, this disease may be, to a certain extent, thrown off, in all the cases which I have encountered it has required prolonged and systematic medication to perfect a cure. If left to itself, post-nasal catarrh will finish by propagating its baleful influence to many of the cavities connected with the nasal fossæ, and will, as we have clearly seen, occasion, by its complications or through itself, impairment or loss of hearing.

diminution in the sense of smell or complete anosmia, blunted taste, catarrhal troubles of the eyes and weakened eyesight, neuralgia of certain branches of the fifth pair of cranial nerves, obstinate and painful headache, etc. Among these functional troubles, the implication of the organ of hearing with more or less complete impairment of the hearing-power, is one of the most frequent determinations of the disease, and is one of the most important for which to begin treatment at an early date. Besides all the troublesome affections to which I have referred, and which render follicular disease of the naso-pharynx a serious and important affection, I would add that, with this affection of the throat existing in an aggravated form, the appetite is apt to be very capricious, and general malnutrition is an immediate or direct consequence. With many persons it has made it possible for them to readily imbibe the seeds of diphtheria, scarlatina, and other contagious diseases which have such *marked* local manifestations on the mucous membrane, which covers the pharynx, fauces, and tonsils. But this is not all. Undoubtedly, the patient affected with long-standing follicular disease of the naso-pharyngeal space, sooner or later develops this same follicular disease of the remaining portions of the respiratory tract; of the pharynx at its middle and lower portions first of all; then of the larynx, and finally of the bronchial tubes. Hence comes, I am now thoroughly convinced, the initial stage, in certain instances, of what afterward develops into different forms of pulmonary phthisis. Of these, the purely catarrhal is, by all odds, the most frequent. Nevertheless, I am satisfied that such patients occasionally develop miliary tubercles, which had previously remained latent and unsuspected. I am glad to find this opinion shared by others. Among them I would cite Dr. Sterling,* who believes that chronic naso-pharyngeal catarrh is a prominent factor in the production of fibrous and catarrhal phthisis, and, therefore, considers it very important to treat this affection systematically by the usual astringents. In the atrophic form, iodine locally and different remedies internally, which excite mucous secretion, are recommended.

Etiology.—Formerly, as our ancient authors who were of the period of Galen and Hippocrates inform us, inflammatory conditions of the pituitary membrane were believed to originate in the brain itself, and the watery, mucous, or purulent secretions which came from the nasal passages were said to descend from above, and to be a product of secretion of the diseased nerve-cells of central origin. Much later on in medical history, and

* Proceedings of the King's County Medical Society, Brooklyn, 1880, i., 5, 14-23.

owing to the exhaustive researches of Schneider, this erroneous idea, of the first fathers in the art of healing, was abandoned, and it was admitted by all, that ordinary cold in the head was a disease of the blood, and that the morbid secretions came from the small blood-vessels of the pituitary membrane. No further back than half a century ago, the medical world was divided between those who considered all catarrhal inflammations, without regard to their localization, as manifestations of a general constitutional condition, and those who considered them as purely inflammatory in character, and caused only by external influences. In our day, the latter opinion has, perhaps, been the more prevailing one, and such eminent scientists as Niemeyer have scouted the idea of nasal *catarrh* being aught else than local in its nature and its cause, and we are informed that as exposure of the head to a cold or humid wind with insufficient covering will surely produce an acute *coryza*, or wetting of the feet a case of catarrhal laryngitis, so an infusion of elder-flowers and a flannel undershirt will rid one of either or of both. Great illustrations of an antagonistic pathological school in France, like Monneret, Chauffard, Jaccoud, Bouillaud, have bravely entered the lists in favor of their own—not less authorized or less well-defended belief. So the problem rests in abeyance, and it is for the future to determine which of the contending parties is right. In a question where clinical experience must, of necessity, be our main reliance, the wise interpretation of this experience will eventually give us the solution.

In New York, Boston, and Philadelphia, in many of our Western cities, on the sea-shore and in the interior, in fact, over widely extended and very different sections of our country, post-nasal catarrh prevails to an extent, which originates much inquiry, and occasions more than passing anxiety to those who have observed its course. Vast numbers of people are already affected with it. Men, women, and children are alike its prey. All ages and professions are subjected to its symptoms and complications. Moderate differences or changes of climate only partially affect its growth. In individual instances its onward and rapidly progressive march appears to be somewhat delayed, if not completely arrested, by breathing a high, equable, and dry atmosphere, or by the respiration of air impregnated with balsamic odors. In other and numerous examples, when once the catarrhal affection has become firmly seated, it is but little influenced for the better by the most rational hygiene and an ambient medium, seemingly the most perfectly adapted to individual needs. Usually speaking, however, a cold, damp atmosphere, subject to sudden and great changes of temperature, is supposed to be a general and efficient, if not exclusive, cause of the pro-

duction and extension of post-nasal catarrh. No doubt this accepted belief has some basis in fact, and yet the more closely I have been able to investigate the subject, in its multiple aspects, the more thoroughly am I persuaded that the received opinion is in part erroneous.

The development of the malady is not much affected by habit or occupations, and strong and weak organizations are similarly attacked. No constitution is entirely exempt, but certain persons are more disposed to contract it than others.

While I believe, therefore, that certain accidental conditions may be instrumental in developing its manifestations I am equally convinced, that unless a special constitutional tendency exists in the individual, he will but rarely take it, and develop it to any very great and annoying degree. Post-nasal catarrh must not be confounded, as it almost universally is, with ordinary rhinitis. It is not simply an acute or chronic inflammatory condition of the pituitary membrane, nor should it, therefore, be treated in the same way ; for, if it is, almost signal failure will follow our every effort. An acute or chronic coryza is, without doubt, a predisposing and, at times, a proximate, and partially efficient, cause of rhinitis ; but, in order to effect the grafting of post-nasal catarrh upon the nasal and pharyngeal mucous linings in a permanent manner, a certain diathetic condition is essential. The affection has existed in germ previously, so to speak, and by reason of one or more attacks of cold it takes on its full growth, and changes from *latent* to obvious, as regards both its pathology and symptoms.

The diathesis, which is present, is called, for lack of a better term, "catarrhal." In many instances, however, there would appear to be some relation existing between the granular condition of the naso-pharyngeal space and the herpetic disposition so frequently manifesting itself by eruptions upon the integument. Just as the man who bears this latter in his system avoids eating shell-fish, cheese, salt meat, spices, and all substances which have an irritating effect upon the skin, lest an eczema, psoriasis, pityriasis, etc., may be very much aggravated, so the use of tobacco or alcoholic stimulants, even in moderate quantities, exposure to a damp, cold atmosphere, to the inhalation of irritant and pernicious vapors, will always accentuate and increase the outward manifestations of the diathesis in which granulations of the naso-pharynx are a prominent feature.

In the second volume of Morell Mackenzie's remarkable work,* he refers at considerable length to the etiology of chronic catarrh of the naso-pharynx in the United States. For him, the

* A Manual of Diseases of the Throat and Nose, vol. ii., pp. 335-39.

main efficient cause of the great prevalence of this disease is *the inhalation of dust*. To our badly paved and dirty streets, to our poor country roads, to the absence, in many of our towns, of any system of scavenging, we *owe* it in great part. Errors of diet, especially the habitual use of condiments with our food, and overheating our houses by means of hot-air and steam, are, without doubt, additional factors in causing it, but they are of only minor importance, and the real thing which occasions this most obstinate and distressing affection is *dust*, the character of which varies, of course, greatly, according to the locality. "In some parts it is a fine sand, in others an alkaline powder, while in the cities it is made up of every conceivable abomination, among which, however, decomposing animal and vegetable matters are not the least irritating elements." And further on, after protesting against what he terms, in speaking of the "catarrhal diathesis," the fallacies of the French school, he finishes his remarks on causation in this manner: "Seeing, however, that the complaint is so very common in America, that it affects people of every temperament and constitution, and that it is readily acquired by visitors to the United States, it more probably depends on atmospheric conditions than on any diathesis."

While I cannot but admit that there is much value in MacKenzie's observations, and that in a very large proportion of cases irritants, of the kind he refers to, are important agents in making the disease show itself, and persist indefinitely after it has first appeared, still I must declaim against the *causes* assigned of "catarrh" in America being *universal*. In many New England towns the roads are good, scavenging is well conducted, people of the better classes do not *eat pickles* habitually, and yet follicular disease of the naso-pharynx prevails to a considerable degree.

Again, how is it, with the omnipresent cause, of which MacKenzie has taken careful and truthful note, ever acting, that anyone gets relief from the symptoms of "catarrh" in the United States? And unquestionably they do get relief; indeed, many typical cases are wholly cured. By *cure* I mean they are relieved of all unpleasant or annoying symptoms. It may be asked now, Can the "catarrhal diathesis" be cured? In one sense, yes, and in another, no. It may be cured, at times, in so far as its manifestations are concerned; it cannot probably be cured in its essence, any more than the tubercular, strumous, or gouty constitution can be absolutely eradicated.

Contagion.—Many physicians of our day, and especially those who are ardent advocates of German methods, are prone to attribute to every clinical fact observed only the importance, which appears to belong to it after close microscopic study. The gen-

eral pathology or philosophy of medical science is much ignored, and everywhere we find an evident desire to localize the agencies, which are at work, and to limit their action and effects to some one particular tissue or organ.

This is especially true of catarrhal affections ; for, without much regard to attendant circumstances, their presence is frequently accounted for by the influence of agents acting topically. They are then very naturally considered to be the offspring, as it were, of a reunion of accidental conditions, affecting one or more individuals of a number. When, however, a disease becomes wide-spread and affects a very large number of individuals, such an interpretation is inadequate, and we are obliged to recur to some special climateric or atmospheric influence capable of being its efficient cause. This we accept already for many diseases, and most readily for those which are liable to become epidemic, extending themselves over large tracts of country and attacking people of all sexes, ages, and conditions after a similar manner. Our belief still remains, though numerous and accurate investigations with respect to the condition of the prevailing atmosphere have not, as yet, found out the contagium or infectious principle. Much of what precedes has its direct application to the question of transmission of naso-pharyngeal disease. The question is frequently asked, Is "catarrh" contagious ? By it is usually meant the chronic form of post-nasal or naso-pharyngeal follicular disease ; is it contagious ? While I am not familiar with any experiments of direct inoculation that have been made, and the question cannot, therefore, be categorically answered, I am of the opinion, in the strict and limited use of the word contagious, or transmission of this disease by direct contact, that it may or may not be carried from one person to another, according to whether or not the constitutional condition is present which is essential to the grafting of the disease on the naso-pharyngeal mucous lining. I know of instances of persons suffering from an aggravated form of naso-pharyngeal follicular disease, who have lived in close proximity (i.e., a husband and wife) for many years, and yet the healthy individual, primarily, has never become subject to this disease. I have also known examples in which I had good and even powerful reasons to believe, that this affection had been directly communicated to one who was, however, in an evidently predisposed state to contract it. It is certain, however that the rôle in the transmission of this affection, pertaining to certain special yet widely disseminated climateric influences, is a far more important one than that of the contagious noxa carried from one person to another. In proof of this I would ask, How is it that a disease, which is so prevalent in many sections of our country,

is certainly less known and familiar in England and on the Continent? Certainly if the extensive propagation of this affection were merely a direct consequence of intimate contact, there would be just the same probabilities of the increase there as here.

Despite this view, Blackwood* believes in the contagiousness of post-nasal catarrh. He has seen instances in newly married persons, and in children who had slept in the same bed with those thus affected, which sustain this statement. To preclude the possibility of error, he was careful to eliminate examples where there were any preceding symptoms of this disease, any question of syphilitic taint, or even a well-marked hereditary tendency to catarrhal affections.

Diagnosis.—Chronic follicular disease of the naso-pharyngeal space may be confounded with ulcerous coryza, adenoid vegetations at the vault of the pharynx, and mucous polypi of the posterior nares. From the first it can be differentiated by the absence of ozæna, the number of pus-cells in the discharges, and by the quantity and color of the crusts. Moreover, in *ulcerous coryza*, either syphilis, scrofula, glanders, metallic poisoning, the anterior existence of fever, accident, or a foreign body, etc., can usually be discovered by careful inquiry, as a sufficient cause of this disease. Of course, the *ulcers* themselves, when found, are pathognomonic of it. Even without the absolute certainty which the sight of the ulcers gives, we have a very strong proof of the presence of ulcerous coryza, when we find bits of necrosed bone in the nasal secretions, or that the nose has suddenly become flattened without obvious cause.

Adenoid vegetations may be distinguished from chronic follicular disease by the facial expression which is so peculiar in the former disease; by the imperfect pronunciation of nasal consonants which exists with adenoid vegetations; and by the signs furnished with the rhinoscopic mirror, and by digital examination. From mucous polypi of the posterior nares, by the light gelatinous color and configuration of these polypi, which as seen in the rhinoscopic mirror, when they fill up one or both posterior nares, are almost pathognomonic. If the polypi extend further in a downward direction, and rest on the soft palate, their size, situation, and points of insertion can be best appreciated by examination with the index-finger.

Varieties.—I only recognize two forms of chronic follicular disease of the naso-pharyngeal space, and these are: 1. The form I have described, and which, for distinction, might be termed, in many instances, *chronic hypertrophic follicular disease* of the

* New York Medical Record, January 10, 1880.

nasopharynx. 2. *Chronic atrophic follicular disease* of the nasopharynx. In the latter form of the disease, there is, indeed, a certain degree of atrophy present in very many instances.

Never is this observed in cases, which are not already of long standing. It is likewise true, that we usually encounter it among adults. I have also found a notable atrophy of tissue in the nasopharyngeal space among children, who at the same time were profoundly anæmic and suffering from constitutional blood dyscrasia, occasioned by scrofula, phthisis, or syphilis. Upon examination by means of the small mirror, the nasopharyngeal space in these instances is found to be more capacious than usual. The posterior border of the septum is thinner, the Eustachian tubes more prominent, the fossæ of Rosenmüller deeper, the mucous membrane thinned, and the glandular enlargement less marked than in the ordinary form of post-nasal catarrh. Instead of an increase of secretion in, or from, the nasopharyngeal space, there is usually a marked diminution of its quantity. The patient complains of dryness of the nose and throat, and indeed the whole pituitary lining, as well as that covering the nasopharyngeal space and the middle and lower pharynx, is dry, red, and parched in appearance. These are the cases in which we also notice, frequently, the glazed appearance of the lower post-pharyngeal wall, which is described as *pharyngitis sicca*, and which almost always indicates old, atrophic disease. In very numerous instances, it is accompanied by an exhaled breath which is unusually fetid, although not often having the unbearable character of true ozæna. According to some there is a *third* variety, and which Wendt * calls *hyperplastic catarrh* of the nasopharyngeal cavity, and which is, as described by him in its less aggravated forms, merely an exaggerated phase of ordinary chronic follicular disease of this region. In its more typical forms this so-called "hyperplastic catarrh" is in reality the disease known as, "adenoid vegetations of the vault of the pharynx," which has been so exhaustively described by Wilhelm Meyer.† When the former condition exists, I have found the mucous membrane of the nasopharyngeal space much thickened and of more than ordinary consistence. The glandular development in this region is very considerable. Usually each follicle is semi-globular and ranges in size from that of a mustard-seed to that of a split-pea. Rarely, I have noticed them somewhat fimbriated. I have never been able, however, to distinguish in this disease the conditions of enormous glandular development, so fully described by many foreign writers. When the glands are very large and closely juxtaposed, they, together with the thickened mucous membrane,

* Cyclopædia of Practice of Medicine, Ziemssen, vol. vii., p. 87.

† Proceedings of the Royal Medico-Chirurgical Society, October 18, 1869.

block up the naso-pharynx very notably, render the breathing at times through the nasal passages difficult, and may, possibly, compress the Eustachian orifices to such a degree as to occasion considerable impairment of hearing.

Treatment.—Hitherto, the treatment of chronic follicular disease of the naso-pharyngeal space has proved most unsatisfactory to the majority of medical practitioners. Even to professed throat specialists there would appear to be no particular method of cure which meets with general approval. There are, indeed, a few of our colleagues who boldly affirm that they have cured many cases, of long standing, which to other practitioners have shown themselves refractory to all ordinary therapeutic methods. This may be accomplished, they tell us, in a very rapid manner, by means of caustic solutions applied to all those parts, which are the seat of the morbid process. Unfortunately, these remedies, which are so efficacious in the hands of a few, have not been equally useful when tried by others, in cases apparently altogether similar. This fact has produced scepticism in many minds, with respect to the utility of mere local measures of relief, and numerous specialists now admit the necessity of general medication, adjoined to topical applications, if we may fairly look for a permanent recovery from this disease. These latter, however, are not inclined to underestimate the difficulty of obtaining this result; on the contrary, they acknowledge, though with unfeigned regret, that their best-directed efforts are, at times, completely baffled. Such testimony on the part of men who possess high professional qualifications, goes to corroborate the assertion, that the true treatment of post-nasal catarrh is still unknown. I also, in company with several of my contemporaries, held this belief. At present I am less inclined to make a like admission. Without doubt, many points in regard to its march and terminations are still ambiguous, and research and study are required to unravel what is obscure. Nevertheless, I feel confident that something real in the way of progress has been acquired, and the goal, toward which many are directing their efforts, is not so far removed as formerly. At first, in my treatment of post-nasal catarrh, I made use of those remedies, both local and systemic, which are usually employed. Little by little my faith was shaken, and methods received and put in requisition for a time as useful were afterward entirely abandoned. Some were so well adapted to the obvious remedial indications that I was loath to throw them aside, believing that I held the panacea of a distressing infirmity. More than once my sanguine anticipations have been disappointed, and though to-day my appreciation of what I shall offer in the following pages is tempered by

my remembrance of former erroneous convictions, I trust my experience has not been without bearing some good fruit. From all that precedes, one can appreciate to what unfortunate results bad treatment will infallibly lead. Take, for example, the old-time practitioner, or even one of later date, but who is not familiar with recent methods of examination, and see how he must of necessity fail of exact interpretation and sound treatment of maladies respecting which he labors in the dark. Every trouble of the nose or throat, which gives rise to those symptoms, marked as essential, is to him nasal catarrh, unless he is able with his unaided vision to distinguish other pathological conditions. Manifestly, therefore, if he be bold enough to go on with the care of his patient, though he can have made but a very imperfect and inaccurate diagnosis, he will, in many instances, fail to accomplish a cure, where a physician who can assign the rôle of each analogous or dissimilar state of the organ would immediately place the patient under suitable treatment. So in the one case the patient remains stationary, or goes on from bad to worse, whereas in the other he has the advantage of the last word of human science and skill, and will sooner or later obtain a permanent recovery. When treatment is desirable, what are the indications which should guide us in the selection of remedial agents for this disease?

I. *General remedial treatment.*—Inasmuch as I believe that follicular disease of the naso-pharyngeal space is under the dependence of a general diathetic condition, I naturally consider systematic treatment of primary importance. Previous to the exhibition of medicaments, the beneficial effects of which upon a morbid condition of the air-passages are known, I bring into use, as a rule, one or more of those drugs noted for their corroborative power.

Iron, quinine, cod-liver oil, arsenic, and strychnia have been employed on different occasions, and in variable doses. I prescribe them in the belief that, many of my patients show signs of anaemia, loss of flesh, or of a general debilitated condition, in which the nervous system enters for its share. While, however, many old cases of catarrh are grafted upon a worn-out or broken-down state of the organism, where the drugs just mentioned are valuable adjuncts, there are frequent examples where the patient has been in the enjoyment of a fair amount of health, and there do *not* appear to exist marked indications for the employment of tonic treatment. In the first division, also, I merely attribute importance to strengthening measures, while I have in view the state of *general* health; for their practical utility, looked at with regard to their local influence for good, is not at all times evident. True it is, nevertheless, that habitual cold

bathing, a highly azotized food, plenty of exercise in the open air, aided by an occasional tonic treatment, when the season is unusually trying, or normal health and vigor somewhat impaired by overwork or anxiety, will be able to ward off effectually, for awhile, the pernicious effect of individual predisposition and climatic influences. But if post-nasal catarrh is permitted to become once firmly established, the two latter all-powerful factors of the disease will render complete recovery quite impossible, unless special, general, and topical medication be employed both rationally and with system. The desiderata then wished for are, in my estimation : *First*, some one particular drug, or a combination of drugs, given internally in suitable doses and at well-regulated intervals, which will affect, in the best possible manner, the glands and mucous lining of the throat and nose; *second*, a topical application, which will answer like indications.

In order to discover, if possible, the first one of these much-wished and sought-for prizes, I have not thought it unworthy of patience and endeavor on my part to experiment with nearly all the known agents of the pharmacopoeia, which are referred to as having a useful therapeutic effect upon mucous membranes in a diseased condition. Chlorate and iodide of potash, carbonate and muriate of ammonia, ammoniacum, guaiacum, ipecac, squills, sulphur, mercury, cubeb, copaiba, and still others have been faithfully and persistently tried by me in different typical cases, singly or in varied combination, and in large or small, continued or frequent doses.

Each one of the drugs named has appeared to be, in individual instances, of real advantage to the patient, and its beneficial effects have been of longer or shorter duration. I am intimately persuaded that occasional cures have been established; much more frequently, only temporary relief has resulted from their administration. Whenever what for *the time* was obviously a perfect recovery has taken place, local remedies have been employed concomitantly with general measures of treatment. Finding that my success was so variable, I have finally been led to the conviction that, while follicular disease is at times due to the catarrhal diathesis pure and simple, so it may be, and frequently is, attached to the gouty, herpetic, syphilitic, scrofulous, and tubercular. The malarial influence may likewise be evident, and antiperiodic remedies may then prove to be of the greatest service, when other remedies fail entirely to produce good results. When any of the above constitutional conditions, which may be either hereditary or acquired, exist, manifest indications arise which we will do well to consider, and to some extent be influenced by them.

Before mentioning, however, the remedies I have put in request in these last-named cases, let me say a few words with respect to three medicaments which I believe will be found most useful in the treatment of follicular disease of the nasopharyngeal space, where the patient is free from any other diagnosis.

These three are sulphur, cubeb, and ammoniacum.

For quite a time I have prescribed sulphur-water from the White Sulphur Spring of Sharon.* It was ordered in doses of a drachmful three times a day, and several of my patients acknowledged how instrumental it proved in ameliorating their condition.

There is nothing new, assuredly, to European observers, more particularly to the French, in the use and efficacy of sulphur in throat and bronchial troubles. In the United States, if one may be able fairly to judge the question by the perusal of special articles in our ordinary text-books, or those in contemporary medical periodicals, the same value is *not* attached to its employment in these cases. When it is made use of under the form of spray into the nasal passages, with an ordinary atomizer, I do not believe that sulphur-water is anything like so beneficial in its results as when given by the stomach; for, employed internally, we secure the advantageous effect of its elimination in part by the mucous membrane, and we avoid what I am convinced is frequently injurious, viz., the irritating and oft-repeated contact of coarse sprays and solutions through the nasal osseæ.

This difficulty, however, has been in great measure removed by decided improvements made latterly among us. During the last summer (1884), I am glad to state that, owing to the knowledge and enterprise shown by J. H. Gardner & Sons, proprietors of the Pavilion Hotel, at Sharon Springs, N. Y., the various modes of *inhalation* in use at the sulphur springs in France and elsewhere in Europe, have been introduced in this country. Already the Messrs. Gardner have made a beginning in their bath-houses of the methods most approved by distinguished authorities abroad. They have now in operation three rooms, one for "dry inhalation," a second for "pulverization," and a third for inhalation."

The *Dry or Gas Inhalation* is the mode followed at Allevard, Savoy, France, where there are seven large rooms devoted to this system, and which are patronized by three hundred to four hundred invalids daily during the season.

* During the past few years I have not prescribed this water, as it was at times difficult to obtain, and also because it was the cause of dyspepsia with some persons. This was doubtless due to the excess of sulphate of lime in its composition.

In these rooms the sulphur-water, at the natural temperature of the spring, is discharged from a small jet against the concave surface of a glass cylinder: thence it falls in drops into a shallow basin, whence it drips into several successive basins, larger as they approach the floor. By this method the water is exposed to the surrounding air in drops, thus quickly eliminating its gases, and the room, which is kept closed, is filled with the gas.

Into this room, with the air thus charged, the invalid enters, without change of clothing, and remains breathing the naturally medicated air for such length of time as a physician may advise. This method is also in use at Marliez, four miles from Aix les Bains, and patients avail themselves of it in connection with the cure at the latter place. These gas inhalations, I believe, may be highly commended in hypertrophic catarrh with profuse thin secretions, and have been administered already during many years with great success at the places referred to, in various difficulties of the respiratory organs.

The *Pulverization Room* is an apartment where the pure sulphur-water is atomized by steam, after the manner of the most-approved steam atomizers. The air of the room becomes saturated with the pulverized sulphur-water, like a fog or mist, and invalids upon entering protect their clothing with a rubber cloak and hood. The application is moist, instead of dry, as in the other room. This method is employed at almost every European sulphur spring, and more particularly at those where the water is not so highly charged with gas. It seems to me it would be particularly efficacious in those forms of atrophic catarrh of the nose and naso-pharynx, where the secretions are diminished, and where the tendency exists to rapid accumulation of fetid, adherent crusts.

The *Inhalation Room*. In this room the sulphur-water is atomized by compressed air, forced into a cylinder. Small rubber tubes convey the air to small tables in various parts of the room. The tables are provided with standards to hold the end of the tube, into which is inserted a glass atomizer. The invalid sits in front of the table with a glass face-shield in the hand, the attendant turns a cock, and sulphur-water, pine-needle extract* and sulphur-water, or any desired combination with sulphur-water, is applied to the nose, or throat, as may be indicated. The indications for the use of this room would be in those cases of hypertrophic catarrh where the discharges are inconsiderable in quantity, or tend to become thick and viscid.

Cubebs is, likewise, a drug, which stands very high in my estimation. *Alone*, it will be, in many instances, of very great

* Pine-needle extract may now be purchased in New York City, at all of our well-known druggists.

assistance when other drugs have entirely failed in their effects, and when combined with suitably formulated powders and solutions employed topically, it will cure, I am persuaded, a certain number of old and very obstinate cases of catarrhal trouble.

At first, I used the oleo-resin, and from the poor results I accomplished with this preparation I was disposed to consider the drug itself as much overrated and relatively inert. Fortunately, I was induced some time ago, after the perusal of a remarkable pamphlet by Mr. Trudeau, relative to its exhibition to patients attacked with toxic diphtheria, to try its effects when given in powder under the form of a mixture or confection, and in large doses continued for several weeks or months. If given for this last-mentioned period, it is well to interrupt its administration for a few days every two weeks, so as to allow the patient to recover from its too constant influence. The following is, in my experience, an excellent formula, which I can entirely recommend to those who desire to make a trial of cubeb in fresh-ground powder :

B. Pulv. cubebæ.....	3 ij.
Syrupi aurantii	3 iiij.
Aq. menth. pip.....	3 ij.
Aquæ.....	ad. 3 viij.

M. et S.—A teaspoonful to be given every two or three hours—up to eight or ten teaspoonfuls in the twenty-four hours, depending upon the tolerance of the patient on the one hand, and the amount of secretion on the other.

Usually my patients have had no difficulty in taking the cubeb mixture. It may be given before, after, or between meals ; and although it causes at times some nausea and diarrhoea, or an erythematous or slightly papular eruption upon the skin, these phenomena are *not* frequently observed, nor at any time of such character as not to be immediately influenced favorably by giving the medicine in smaller doses, or putting a stop to its use altogether for a few days. Cubeb, in nature, is certainly eliminated from the system in part through the glands of the throat and nose, and these follicles are changed, little by little, from a morbid to a healthy condition by its persistent exhibition. The nature and amount of their secretion is modified. It becomes less and less in quantity, and, besides, loses its acrid effect and unpleasant, not to say offensive, odor.

Though its viscosity does not immediately disappear, this result will likewise be ultimately produced. The stuffiness and constant hawking will gradually be diminished, and the ability

of breathing through the nasal cavities be somewhat improved. It also gives a sensation of freshness, which lasts for quite a time, to the mucous membrane of the nasal cavities; to those who have had that disagreeable feeling of dryness of these parts, which is so often present with catarrh of the nose, this is no inconsiderable advantage.

In the third place, ammoniacum should not be omitted in this examination. When it is combined in *very* small doses (gr. i.-iiij.), with analogous expectorants, such as ipecac and carbonate of ammonia, it will greatly lessen the amount of secretion. If, by the action of these combined drugs, this product should become too viscid and adherent, and the pharynx become raw and painful owing to repeated hawking, this inconvenience may be overcome by the occasional use of the carbolic and soda spray (hereinafter mentioned), and the mixture may, as a rule, be continued without interruption.

Whenever influences other than a purely catarrhal one are at work, general remedies may be employed with advantage. A certain number of such patients are obviously dominated by malaria. Their systems are literally poisoned by this dyscrastic affection, and it has manifested itself also upon the mucous membrane of the throat and nose. These individuals are not so often encountered as some practitioners affirm. They do occur, however, and whenever met with, are wisely treated by administering to them, either by itself or in conjunction with cubeb, moderately large doses of quinine, say from fifteen to thirty grains daily. Its influence for good, in these instances, is at times unmistakable. If, however, the poison from malaria is deep-seated, obstinate, and unaffected by the use of quinine, in suitable doses and for a long period, Fowler's solution may be prescribed. At times this proves nearly as ineffectual. Under these circumstances I have had good reason to laud the efficacy of "Eau de la Bourboule (Source Choussy)." This is a natural arsenical water of France which has only been imported and employed latterly by physicians of New York City. I am told that one eminent dermatologist is also now making use of it with successful results. I can therefore believe, that its employment is likewise indicated in those cases in which an obstinate post-nasal catarrh appears closely allied with the herpetic diathesis, which shows itself by the familiar cutaneous lesions of certain forms of psoriasis, eczema, etc. I have given it one hour after eating, in quantities of two to four ounces, three times a day, and have continued it for two weeks at a time. It is wiser to allow a short respite after this period, and to resume its administration in a few days or a week. In gouty patients, guaiacum, under the form of the ammoniated tincture, has, I believe,

effected more than one cure. When syphilis exists, and without regard to the stage at which it has arrived, give small doses of mercury, more particularly the bichloride or biniiodide salt, and continue them during many weeks and months. As regards the iodide of potash, I have little to say in its favor. I am fully aware that an active and beneficial influence in catarrhal affections of the air-passages has been urgently claimed for it of late, by more than one eminent practitioner of medicine. To this I cannot subscribe, in so far as my experience goes, with respect to its use in follicular disease of the post-nasal space. True it is, when first given, it lessens the viscosity of the secretion from these parts, as do other salts of the alkalies, but it congests or inflames them in a very obvious manner. When taken for one or more days consecutively, and in moderately large doses, it will usually produce a very red and swollen condition of the nasal mucous membrane. The nose will become so much stopped up as to interfere with normal respiration through the nasal fossæ, and thus cause a great deal of annoyance. Subsequently there is a considerable transudation of watery fluid from the vessels of the pituitary membrane, and increased discharge from the glandular follicles. The habitual symptoms of an acute attack of coryza are established, and all of its disagreeable features are occasionally accentuated. If the iodide be continued at the same dose, this manifestation of iodism may remain for some time, or else subside gradually after a few days. In either case, and when after thorough and prolonged trial this medicine is altogether abandoned, I have noticed only very infrequently, that the post-nasal catarrh had been at all benefited. I am at present inclined to affirm that, iodide of potash has very little, if any, real value in the treatment of follicular disease of the naso-pharyngeal space. Latterly, I have rarely prescribed it in cases of this sort, with the hope of alleviating the catarrhal condition, even though the patient may give a syphilitic history and show upon his body certain distinct manifestations of an early or advanced stage of the other specific constitutional disease. Scrofula and tuberculosis may be decidedly benefited by the co-operation of cod-liver oil and a proper change of climate; but we are all too familiar with such cases, their long march, wearisome complications, and dread consequences, to be over-sanguine with regard to any method of caring for them now known to scientific observers. During the past year, in many instances in which the patient has been particularly annoyed by the fetid odor of his exhaled breath, I have given internally, with great success, small doses of salicylic acid combined with spirit of milderus and glycerine. This I have done irrespective of the con-

stitutional condition present. The following is the formula I have employed :

B. Acid. salicylici	3 i.
Liq. ammonii acetatis.....	5 ij.
Glycerini.....	3 i.
Aqua.....	ad 5 vi.
M. et S.—A tablespoonful every six hours.	

This mixture will, at times in the course of a few days, render the breath quite inoffensive, when previously it had been nauseous to an intense degree, and caused great and almost unconquerable repugnance to every one who came within close proximity of the individual thus affected. Whenever the patient is slightly jaundiced, the tongue coated with a white or grayish fur, and there is almost complete anorexia, nothing seems to help matters more, even in the effects produced upon the catarrhal state of the naso-pharyngeal space, than the exhibition of a cholagogue. The three most advised, in my estimation, are euonymin, podophyllin, and hydrarg. c. creta. Of the former a grain or two should be given every evening on going to bed, during several successive days. Its action is frequently most satisfactory, as it starts the torpid liver to active elimination and thus frees the system of much effete material which was becoming rapidly resorbed. But drugs given internally are not by themselves always sufficient to produce a rapid or permanent beneficial change of the glandular affection, even though it be of simple uncomplicated type.

The question, therefore, naturally arises : *Locally*, how should post-nasal catarrh be treated ?

It is, and has long been, a much mooted, discussed, and very difficult question to answer.

Quacks and other false prophets have caught hold of it, and made it a fruitful source of profit to themselves, by pointing out to the public ready modes of treatment which must infallibly cure their suffering. Usually speaking, their remedies are pre-destined to work rapid recoveries, and no human organization is able to effectually resist their magical power for good during any appreciable lapse of time.

Further, we have soft-hearted and innocent divines, who publish in the columns of our daily press long accounts of their experience and confidence in these remedies.

Meanwhile, we of the profession, who have regard for our present code of ethics, feel obliged to stand aside with folded arms, unable to appear in public and expose such shameful manœuvres.

I may be permitted, however, to state that I have made a fair trial of more than one of these catarrhal specifics which are sold by many well-known druggists in New York and elsewhere, and have not found them to respond favorably to their *false assurances*.*

Among regular and honorable practitioners there is, unfortunately, no method of local treatment adopted as yet which carries recognized authority with it. All is still vague and uncertain. One physician uses this solution and another that; one practitioner believes in the curative action of powders of particular nature, and which are generally more or less astringent or caustic. A third party thinks the main thing to have ever in view is the preservation of perfect cleanliness of the parts affected, by watery medicated douches. These douches, according to most authorities, should be warm, or even hot, in temperature. A few specialists, however, of wide repute, recommend cold injections (Duplay). In my opinion, local treatment (no matter what may be its conditions) is *never* so efficacious as it is frequently believed to be. And this, to me, is true for two reasons: *First*, there is no instrument in general use which will bring either medicated solutions, sprays, or powders into immediate contact with *all* points of the Schneiderian membrane; *second*, applied after the manner which is usually employed, they *cannot* be of *real* service.

With respect to the first, I argue that all medicated solutions, applied by means of the different instruments in vogue for this purpose—viz.: the ordinary Weber's douche (without regard to its different forms), Davidson's or Warner's syringe, the post-nasal syringe, etc., only reach a portion of the nasal cavities. This proposition has, I believe, been proved by me for the usual nasal douche with almost mathematical precision, in an article published in the *New York Medical Record*, August 1, 1874. To this article I refer my readers, and I will not repeat the arguments there employed in order to establish the fact.

The first objection against the efficacy of local medication holds good, in my estimation, as well of finely atomized sprays and almost impalpable powders, as it does of solutions employed with a douche apparatus. Its accurate and evident demonstration is not, however, I admit, so easily furnished.

* As an evidence of the deception practised on a too confiding public, I would instance the nostrum widely known as "Wei de Meyer's Catarrh Cure." According to an accurate analysis of this powder, for which I am much indebted to Mr. A. E. White, pharmacist at William Neergaard's (Twenty-eighth Street and Broadway, New York), it is found to consist simply of bicarbonate of soda, and a small quantity of pink coloring matter. Now all physicians know that bicarbonate of soda is employed continually by us in spray or powder in the treatment of catarrhal affections of the nose, and has absolutely no specific or wonderful action whatsoever.

To make my assertion, nevertheless, acceptable to many minds, it is only necessary that they should recall : *First*, the numerous folds and infractuosities of the mucous membrane lining the nasal fossæ ; *second*, the narrow orifices of communication which these latter have with several almost entirely closed cavities, such as the sphenoidal, ethmoidal, and frontal cells ; *third*, the fact that the vertical diameter of the nasal passages, at their median portion, is double that of the vertical diameter of the posterior openings of these same passages.

How, then, I may ask, is it *physically possible* for powders or sprays to reach all these parts ; and even though this be admitted, can we accept that they will reach all points of the fossæ *in such quantity* as to be practically of much assistance in exercising curative results where the glands have been affected for a long while with a chronic morbid process ? With regard to the second objection, I argue that the solutions usually employed are not sufficiently concentrated to have any very great alterative effect upon the chronically diseased glands, to which direct applications are made after this manner.

Yet we are so situated that we cannot, to any notable degree, increase the amount of the drug employed, for by so doing the douche is rapidly rendered very painful.

To this it may be answered that, if the douche is recognized to be instrumental of benefit to our patients, we ought not to withhold its use because it causes great pain even when properly employed.

True, if it were essential only to use the douche or injections once, twice, or several times. But such is not the case. On the contrary, in all cases of post-nasal catarrh, these washings must be made once or twice daily, and continued for several months, if any apparent curative effects are to be anticipated on account of their employment. To undergo this ordeal would require more patience and resolution than is frequently encountered.

The question now naturally presents itself, Whether or not any sort of local medication is useful or curative of post-nasal follicular disease, and in what measure ?

To this I reply distinctly, that local treatment is a decidedly powerful adjunct of general treatment, but to be so, it must be carried on wisely and with rigid discrimination of the diagnostic features of each case. Not that in the great majority of instances I believe topical applications will or can reach all the diseased parts. Nor am I convinced that alone they will effect absolute recoveries ; for, the best we should expect from them is, that they will materially aid and accelerate the effects of systemic remedies. For my part, as might be presumed from previous remarks, I at present do not use medicated solutions by

means of the douche or syringe, even in old and aggravated cases of simple post-nasal catarrh. My line of conduct is traced for the following reasons, all of which have already been given, but which I shall repeat for the sake of clearness: *First*, they do not reach all parts of the nasal cavities; *second*, those parts which receive the contact of the medicated liquid are not favorably modified by the weak solutions, which are of necessity usually employed in this way; *third*, they cause disastrous consequences in the special organs of hearing, smell, sight, and indirectly of taste.

In the place of solutions employed in the form of an interrupted stream, or of the continuous douche *I have substituted, in my practice, sprays and powders.*

Sprays may be thus introduced into the nasal passages of a much greater degree of concentration without causing too intense pain, and without risk of injuring seriously the organs of smell or hearing, and they penetrate them quite as well as, if not more thoroughly than, injections. Besides, I have found sprays equally useful with the latter, when employed with a little persistence, in detaching hardened crusts of inspissated mucus from the naso-pharyngeal space; their application is certainly far less irritating to the already inflamed membranes, and less irksome and annoying to the patient.

The temperature at which we should employ sprays is about that of the air we are habitually breathing. Very fine sprays approach nearly that state which we encounter in a foggy condition of the atmosphere, or in one where it is almost saturated with watery vapor. We all know that, on the days when there is an excessive degree of moisture in the air, and the temperature considerably reduced, we feel heavy and oppressed, and that our respiratory action is not freely performed. One principal cause of this fact is the exaggerated and continual imbibition of watery vapor by the mucous membrane lining our nasal cavities. The consequence is, it becomes infiltrated and swollen, and these passages are more or less obstructed, and their proper function appreciably interfered with.

This phenomenon is notably augmented, *caeteris paribus*, in proportion with the lowness of the column of mercury. It depends at last, then, upon the conditions which determine the direction of the endosmotic current through organic membranes. Under these two ambient conditions this current predominates toward the vessels contained in the mucous and submucous layers of the nose. Our spray should, therefore, be *warm*, but *not too warm*.

For, we are aware that very many people pass most of their time, in winter and summer, in rooms where the heat ranges

from 70° to 80° F. scale. This, therefore, is about the temperature at which sprays are to be employed by them. And a similar degree of temperature will be required doubtless in these sprays when made use of by others who are the greater part of the day in the open air ; for, inasmuch as they are of necessity very constantly exposed to all vicissitudes of the surrounding elements, their mucous linings habituate themselves, in the majority of instances, to frequent and rapid changes in the ambient medium, and therefore a mean between extremes is a safe rule to guide us.

If sprays are employed at blood-heat, true it is that during the period of their use the endosmotic current is not so likely, other conditions being the same, to take the direction toward the interior of the vessels. Almost immediately after their use is interrupted, however, the exterior ambient air which is inspired lowers the temperature of the medicated liquid which remains in contact with the walls of the nasal passages, and so practically we have little or no advantage from using an atomized fluid at the temperature named. In a problem somewhat complex, we should choose the solution which appears least open to weighty objection, and our first indications viewed in this light, the most correct we are able to formulate.

Sprays should be concentrated, but not sufficient to be caustic in their action. Here I feel called upon to write [on account of the hold that this doctrine has upon the minds of several accomplished observers, and because I am persuaded they are under the influence of an erroneous belief] that the use of saturated solutions of different metallic salts, in the treatment of post-nasal catarrh, is radically wrong. As an example of what I wish to prove, take a highly concentrated solution of nitrate of silver, and let it be applied in spray to the posterior nares and vault of the pharynx, and what is the result ? No doubt so intense an effect may readily be produced as to cover a great portion of the mucous lining with a superficial white slough, resulting from the combination formed between the nitrate and the albuminoid constituents of the membrane in and about the glandular orifices. In this way, by putting a complete stop to all secretion for some time, or aborting it temporarily, as it were, it is possible to create the impression in the mind of a patient, and even be consoled one's self in the belief, that a cure is accomplished. But wait for a few days (without prejudging the situation) after making one or several of these caustic applications, and what will be found ? One of two things : either the secretion as previously, and with exactly the same characters, and in the same amount, or else the quantity of the secretion from the naso-pharyngeal space may be dimin-

ished, although there yet remain, and will continue to show themselves, small pellets of a viscid, tenacious mucus, or mucopuss, of disagreeable taste, which are expectorated from time to time after repeated efforts of hawking.

Even the diminished amount of secretion is not to be considered a gain in one aspect, for it is fairly attributable to the fact that the mucous membrane has become thickened and hardened in consequence of repeated cauterization, and that many of the glandular orifices have become obliterated either by cicatricial closure of their external openings, or by pressure from the adjacent patch of mucous membrane. So much for the treatment of nasal catarrh by the much-vaunted applications of concentrated sprays of nitrate of silver, which, theoretically cannot effect what it is pretended that they will do, if my view of the constitutional nature of catarrh be correct.

The following formula for a solution to be used under the form of spray is a great favorite with me, and is somewhat modified from one recommended by Dr. Dobell, of London :

R. Acid. carbol. liq	℥ xl.
Boracis,	
Sodii bicarb	āā 3 ij.
Glycerini	3 vij.
Aquæ.....	ad ½ viij.
M. et S.—For spray.	

This spray, used once each day or every other day, during a few moments, and repeated several times on each occasion, by means of Sass' upward glass spray-producer (Fig. 79) attached to the compressed air-receiver, by means of rubber tubing and the ingenious, perfect-working, and self-closing cut-off (Figs. 30 and 31), will act most favorably upon the catarrhal condition of the naso-pharyngeal space. After its use, the hardened secretions become moistened and detached in great part, and quickly descend into that portion of the pharynx from which they may be expelled readily by a slight effort of hawking and expectoration.



FIG. 79.—Sass' Upward Glass Spray-producer.

While this statement is true of nine-tenths of the cases of post-nasal catarrh we are called upon to treat, there are some notable exceptions. In these examples the spray is insufficient, unless employed for an undue length of time at each sitting, to detach the hardened masses of mucus from the vault of the pharynx. We are in reality almost compelled to make use of a brush curved at a right angle to its handle, and fixed to this handle by a stout aluminium wire (Fig. 80). By its aid and after

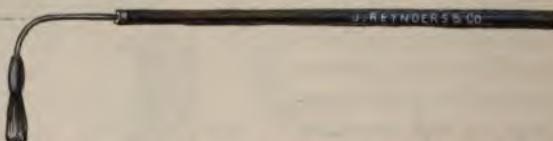


FIG. 80.—Right-angle Brush for Applications to the Naso-pharyngeal Space (Mackenzie).

moistening it in water, we are able, with but little difficulty, to introduce it behind the soft palate in an upward direction and brush the basilar process quite clean of its adherent mucus. Sometimes the mucus comes away upon the brush; sometimes the brush merely detaches it and it soon falls into the middle pharynx, from which it is thrown off by an effort of expectoration. A spray, formulated as I have indicated above, will also act as a very effectual deodorizer of the naso-pharyngeal space, whenever the expired breath becomes offensive.

Instead of carbolic acid in this prescription, Dr. Thornton* employs the liq. sodæ chlorinatæ in the proportion of 3 ss.-3 ij., in the treatment of the symptom ozaena. He has published six cases in which it gave successful results. We may also make use of a small proportion of thymol, in place of carbolic acid, on account of its agreeable odor and valuable antiseptic properties.

Further, these sprays act favorably as antiplastic remedies, thanks to the amount of alkali which enters into their composition, and will subdue, in a measure, the infiltration of all points of mucous membrane where their contact is thoroughly and repeatedly made. Besides, they have a tendency to lessen extreme viscosity of secretion in partially dissolving it, and are, therefore, grateful as a palliative remedy, when the mucous secretion of the naso-pharyngeal space is very tenacious and difficult of separation and expulsion. As the disease improves and there is less formation of inspissated secretions in the naso-pharyngeal space, it is not advisable to make use of the carbolic spray more than once every other day, or twice a week. The

reason for this is, that when the affection is almost well, the solution is too relaxing in its effect upon the mucous membrane, and its need as a detergent application is, under these circumstances, no longer apparent. To this expression of conviction I am desirous to add, however, the statement that the formula, as above given, of Dobell's carbolic spray, has now been employed by me almost daily for several years, and as yet I have been unable to improve it, as an ordinary cleansing and somewhat curative mixture for the atomizer.

When inflammation has invaded the antrum, usual methods of treating nasal catarrh are not often of much curative value. Yet Wolfram * speaks highly, even in such cases, of the use of a nasal spray. He reports one case of this disease, adjoined to marked ozæna, permanently cured in six weeks, by a two per cent. atomized solution of glycerine and tannin, later followed by a solution of alum acetate. Previous to the employment of these means, he had *cleansed* the general mucous membrane of the nasal passages, by means of the douche and a solution of common salt. If, however, the symptoms point clearly to the antrum as being the seat of chronic inflammatory changes, it is indicated to remove one of the bicuspid or molar teeth, and to enter this cavity through the empty alveolar fossa by means of a surgical drill.

Inserting the nozzle of a small syringe through the opening thus made, the antrum should be first thoroughly cleansed with Dobell's solution, reduced in strength one-half, and afterward modified by injections, repeated at suitable intervals, of such solutions as chlorate of potash ($\frac{5}{3}$ i.-O i.), permanganate of potash (grs. x.- $\frac{5}{3}$ i.), compound solution of iodine, and the fluid extract of *pinus Canadensis*. In order to make the drainage more effective, it is often essential to introduce a permanent silver or gold canula through the opening in the upper maxilla, and fasten it to the teeth. Into this canula, the nozzle of the syringe can afterward be inserted for cleansing or remedial purposes. Two cases reported by Daly,† of Pittsburg, point to the efficacy of the preceding treatment, and prove abundantly how reprehensible it is not to be careful and accurate in our examination of all obstinate cases of catarrhal disease.

In cases in which the disease of the antrum is but an extension of previous catarrhal inflammation of the nasal passages, this cavity should be opened in the canine fossa with the dentists' or surgical drill, and only if this method fail to evacuate its contents, should a tooth be extracted (even though sound) and the alveolar fossa perforated.

* Schmidt's Jahrbücher, Bd. 183, No. 3.

† Archives of Laryngology, vol. iii., p. 314.

In the St. Louis *Medical and Surgical Journal*, Dr. Thomas F. Rumbold * insists upon a spray thus composed :

B. Vaselini.....	3 ij.
Glycerini.....	3 ij.
Acid. carbol. liq.....	3 ij.
M. et S.—For spray.	

This should be warmed before application. It is not unpleasant to the taste, and has a very soothing and agreeable effect. It should be applied once in from two to six hours. Dr. Rumbold's great experience gives this recommendation more than ordinary authority. After employing the carbolic spray, I make use, habitually, with excellent results, of one of the following powders, in insufflations behind and above the palate.

1. B. Pulv. iodoformi,	
Pulv. acaciae.....	3 ij.
Morphiae sulph.....	gr. ij.
Acid. tannici	gr. ij.
M. et ft. pulv.	

or this,

2. B. Pulv. iodoformi.....	3 ij.
Pulv. camphorae	3 i.
Pulv. acid. tannici.....	gr. v.
Pulv. acaciae	3 i.
M. et ft. pulv.	

or this,

3. B. Pulv. belladonnæ	gr. xx.
Pulv. morphiae sulph	gr. ij.
Pulv. acaciae	3 ss.
M. et ft. pulv.	

Occasionally, also, I have found the following powders useful :

4. B. Pulv. cubebæ	3 ss.
Pulv. sodii bicarb	3 ij.
Pulv. acid. salicylici	gr. x.
Pulv. sacch. alb.....	3 ij.
M. et ft. pulv.	

5. B. Bismuthi subnit	3 ijss.
Hydrarg. chlor. mitis	3 ss.
Morphiae sulph	gr. iij.
Pulv. acaciae.....	3 i.

M. et ft. pulv.

Iodoform pure, bismuth, the subnitrate and the subcarbonate, are also frequently made use of. In rather obstinate forms of disease, and in those cases in which these powders remain without good effects, I employ the following once every four or five days.

6. B. Pulv. bismuthi subnitratis..... 3 iiij.
 Pulv. argent. nitratris gr. viij.
 Pulv. acaciæ..... 3 i.
 M. et ft. pulv.

Nitrate of silver in this proportion is often a useful adjunct in treatment. In greater quantity, relatively to the amount of powdered menstruum, I have rarely found it useful. After very many trials, I have concluded that nitrate of silver, employed as powder in the way I have mentioned, is far preferable to its use in solution. In this form it does not blacken either the fingers or face of the physician or patient, and it does not discolor surrounding objects. Moreover, it remains applied a longer time to the diseased surface and is less liable, if limited in its application, to produce artificial cold in the head, which lasts a day or two, than when it is in solution. It must not, however, be employed oftener than I have mentioned, in the majority of cases, as it will rather tend to increase local inflammation than diminish it. Upon intervening days the other powders may be applied to the naso-pharyngeal space with excellent results. In those instances in which the exhaled breath is unusually fetid, not only do I now give salicylic acid internally, according to the formula previously recommended, but I likewise apply it locally to the naso-pharyngeal space, where it certainly produces a favorable change in the odor of the secretions. The following formula is one I have repeatedly used.

- B. Pulv. acid. salicylici..... 3 ij.
 Pulv. acaciæ 3 iv.
 M. et ft. pulv.

Use with the powder-blower for the naso-pharyngeal space and posterior nares.

There is one precaution which it is well to mention in the use of this powder, viz.: the operator should be careful to get the curved tube well up behind the palate before blowing the powder into the naso-pharyngeal space. Otherwise some of it will lie on the buccal portion of the pharynx and occasion a stinging or choking sensation, with some spasm of the constrictor muscles, which lasts during a few seconds. When it is well blown into the naso-pharyngeal space, I have not noticed this unpleasant, and sometimes painful, symptom. Whenever a pa-

tient can be treated in my office, I make use of powder-blowers in hard rubber of different curves, as shown in Fig. 43, and which are attached, by means of a bayonet-joint, to a cylinder of compressed air. If the patient must be treated at home or elsewhere away from my office, the powders should be applied by means of the ordinary post-nasal powder-blower (Fig. 41). When the secretion above the soft palate has become, or is already, moderate, and can be detached easily and expectorated by a voluntary effort of the patient, I occasionally content myself with an application daily, or every other day, of one of the powders already formulated or another analogous one, varying it somewhat according to the evident indications of the case, and do not make use of the spray. Medicated powders modify the condition of the mucous lining most favorably, and apparently produce those alterative changes we are anxious to attain. Besides, they are free from one objection pertaining to the employment of atomized liquids, viz.: that, by employment of these latter, endosmotic effects in the direction of the vessels are occasionally produced to excess. Active drugs, used under the form of a powder, may be applied, either pure or mixed, to any required extent, with inert or feebly efficient agents. Powdered gum is especially indicated as the proper vehicle of other powders of greater curative properties, whenever a spray is not used and the mucous membrane of the post-nasal space is only partially or very lightly covered with catarrhal secretions; for its osmotic power is probably developed in a greater degree than that of other powders; and, under the circumstances mentioned, it may serve a useful purpose in diminishing infiltration of the submucous layer. It will be remarked, from what precedes, that I find myself in direct opposition with the categoric affirmation of a distinguished throat specialist of the day, who writes: "All forms of snuff or of powders in the treatment of naso-pharyngeal affections are objected to, the mucous membrane of these passages not being constructed by nature for their reception."*

There are cases, however, in which sprays and powders are ineffectual to obtain curative results. At times, therefore, after removing the inspissated mucus from the naso-pharyngeal space by a curved brush or even with a short forceps curved at right angles for manipulation in this cavity (Fig. 81), I paint the entire vault of the pharynx with one or other of the following mixtures:

- | | |
|----------------------------|--------------|
| 1. B. Tinet. iodinii | gtt. x.-xxx. |
| Glycerini..... | 3 i. |
| M. | |

* A Practical Guide to Diseases of the Throat, Lennox Browne, p. 161.

2. B. Tinct. opii 3 i.
 Tinct. iodinii gtt. v.-x.
 M.

These applications are quite painful for a short time after they are made, but often do good service in altering the character of the secretions. I have infrequently applied the following after a similar manner :

3. B. Tinct. ferri perchlor 3 i.
 Glycerini 5 i.
 M.

Ordinarily, this pigment produces too much drying of the naso-pharyngeal space, and I have been obliged to abandon its



FIG. 81.—Short Right Angle Forceps.

use. Topical medication by means of iodine or iron, in the way indicated, should not be repeated more than twice a week, even in bad cases, or else the naso-pharynx becomes sore and irritable. Occasionally, I have found useful the inhalation of certain dry vapors, such as those of carbolic acid, iodine, tincture benzoini comp., ol. pini sylvestris, etc. When these substances have been employed, I have made use, at times, of a hard-rubber instrument (Fig. 82), somewhat oval in shape, which can be



FIG. 82.—Hard-rubber Pocket Inhaler for Dry Vapors.

unscrewed at its centre, *B*, so as to make two parts. In its interior, which is hollow, there is a receptacle for a small sponge, which is limited upon two sides by a perforated hard-rubber plate, *D*. The extremities are closed by hard-rubber stoppers, *E*, attached by threads to the body of the instrument. When about to be used, a few drops of the volatile fluid are poured upon the sponge, the two sections are screwed together, the

stoppers are permitted to hang down loosely, and one end of the instrument is introduced into one, and then into the other nostril. Air is inspired slowly during a few moments, and brings with it balsamic or other vapors, which impinge directly upon the affected mucous membrane of the nasal and the naso-pharyngeal cavities. I have also frequently employed, with a similar purpose in view, the instrument previously mentioned (Fig. 38). By its use the vapors are projected into the nasal passages, and when only used occasionally, they tend to arrest the formation of mucous secretions in the naso-pharyngeal space. Frequently employed, they dry up the glandular secretion too rapidly, and occasion a slight subacute inflammation of the mucous membrane lining the anterior nasal passages. In rare instances, where there is concomitant obstinate chronic coryza, I now believe dry vapors, inhaled in a diluted form continuously, for an hour or two each day, may render considerable service, and without in any manner becoming prejudicial to the patient. They should be used in this way with the instrument shown on page 45.

Latterly, I have had occasion to adopt the method of Philip S. Wales, M.D. (New York *Medical Record*, vol. x., page 785, 1875), for controlling the velum palati, and enlarging the pharyngo-buccal aperture.* It is effected by means of an india-rubber cord, about two millimetres in diameter, and of suitable length to pass through both sides of the nose, and after passing around the posterior margin of the soft palate is tied around the ears and under the chin. Wales thus describes this simple and admirable procedure: "One end is introduced into each nostril until they both reach the lower portions of the pharynx. At this moment the patient is directed to cough, if the presence of the thread has not already excited this movement; the force of expiration will pretty surely project them into the mouth, when they may be seized with the fingers and drawn externally until the middle portion of the cord, which is external, is arrested against the nasal septum; gentle traction is continued until the soft palate is well drawn forward, when the threads are passed up over the ears and downward beneath the chin, and there tied; or they may be held by the patient himself. . . . Should any impediment whatever exist in the nostrils that the cord cannot be passed by itself, the following little instrument works admirably as a cord-carrier. . . . It is a thin lamina of soft metal, six inches long, and less than an eighth wide, and mounted at each extremity with a small ring,

* Since writing the first edition of this work, I have occasionally used Swinburne's mouth-gag. This instrument is described in the chapter on Adenoid Vegetations at the Vault of the Pharynx.

of an amplitude a little greater than the elastic cord, which having been passed through them, is tipped with small, smooth, oblong fragments of lead.* When the instrument is to be used, the cord is drawn through the rings until one of its tips comes against the corresponding ring; slight tension of the elastic will retain the two in contact, while the point thus formed is being conducted along the inferior meatus. When the metallic point reaches the posterior wall of the pharynx, the elastic projecting externally is pulled through the exterior ring, and made quite slack, so that the instrument may be withdrawn from the nares, leaving the cord in position; a similar procedure is then practised upon the other nostril." Dr. William F. Duncan employs the following device, which appears to him preferable to Wales' instrument; he makes use of an ordinary English catheter of small or medium size, provided with a wire conductor. Into the eyelet of the catheter he inserts an elbow of tape some inches distant from its distal extremity, and fixes it by pushing the conductor home. The catheter is then given a suitable curve, and, together with the tape, its further extremity is passed over the



FIG. 83.—Bosworth's Substitute for Bellocque's Canula.

floor of the nasal fossæ until it reaches the median portion of the pharynx, where the end of the tape which projects into the throat can be seized with a pair of dressing-forceps, and pulled through the mouth so soon as the wire-director is withdrawn a short distance, and no longer holds the tape in the eyelet. The catheter is then pulled out of the fossa, the tape left *in situ*, and the same manœuvre adopted for passing the tape through the other nasal fossa. The rest of Dr. Duncan's procedure is similar to that of Dr. Wales. It will be remarked that Dr. Duncan employs tape instead of elastic cord, and believes it answers quite as well in the great majority of cases.

At a stated meeting of the New York Academy of Medicine, held on April 15, 1880, Dr. F. H. Bosworth exhibited a simple and practical substitute for Bellocque's canula, which is also well adapted to carrying a cord through the inferior meatuses. This instrument (Fig. 83) is a shortened Eustachian catheter of small calibre, bent somewhat at its distal extremity, so as to adapt itself to the curved inclination of the floor of the nasal fossæ. It may be readily passed through them, and afterward,

* An instrument made for me by Tiemann & Co., after this description, has not thus far proved very satisfactory.

by pushing the cord slightly with the fingers, it comes into view, and may be seized with an ordinary dressing-forceps, and pulled through the mouth, while the catheter is drawn out of the anterior naris. The ends of the cord are then tied over the upper lip, and the same manœuvre is executed through the nasal passage of the opposite side. In the event of great deviation of the nasal septum, it may be possible to pass a cord through only one nasal passage, but even in that case we shall get some enlargement of the naso-pharyngeal space, and can, therefore, operate with greater ease and security.

Dr. Wales, in his article, remarks that "the mucous membrane of the nose and throat is by far more tolerant of the contact of elastic substances than of metallic objects, and it is surprising how little indeed in many cases is the irritation caused when the soft palate is doubled upon itself and stretched forward by the cord. . . ." The chief merits of this method, as Dr. Wales truly states, "are the simplicity of the apparatus and the facility with which any professional person may employ it in exploring the posterior nares and the pharyngeal cavity." When the elastic cords are in position and tied, we can use the rhinoscopic mirror perfectly well with the left hand, while with our right hand we can make any local application to the naso-pharyngeal space we desire, without fear of doing serious injury to the surrounding parts. We, moreover, have the great satisfaction of seeing in the small mirror the reflected image of the vault of the pharynx, and, of course, also of any instrument we introduce there during the whole time of its presence. I have had occasion, latterly, to employ Wales' method many times for the direct cauterization of the enlarged follicles, of the naso-pharyngeal space, by means of nitrate of silver fused on the end of an aluminium probe. The applications have usually been made very readily, with only slight after-discomfort to the patient, and with obviously very good results where sprays and powders, locally applied at regular stated intervals during a long period of time, and internal remedies of various kinds faithfully employed, had not resulted in anything more advantageous than temporary good effects. Except in extreme cases, however, I would not advise these applications of pure nitrate of silver, as I am of opinion that they may, by causing closure of the orifices of the glands, do permanent injury to the patient. When such applications are made, they should not be repeated more than once in four or six days, and should be stopped as soon as practicable. It is for the reason given above, that I have been loath usually to employ other stronger cauterizing agents, such as chromic acid, nitric acid, etc. Latterly, however, I have had occasion to employ chromic acid several times in the naso-pha-

ryngeal space. I have made use of it by soaking the roughened extremity of an aluminium probe, wrapped with absorbent cotton, in the liquefied acid. Its action is more intense than that of nitrate of silver, and the patient has suffered considerably after its thorough application. Care should be taken, that the acid be not in excess and run down the post-pharyngeal wall.

In regard to an instrument for applications of strong acids, nothing is more simple than the conception of one which would perfectly satisfy the indications of any hypothetical case which might arise. For example, all that would be required would be a concealed caustic-holder mounted upon a flexible metallic shank, which could be curved at any required angle and length. Further, the spring inside could be so graduated in strength as

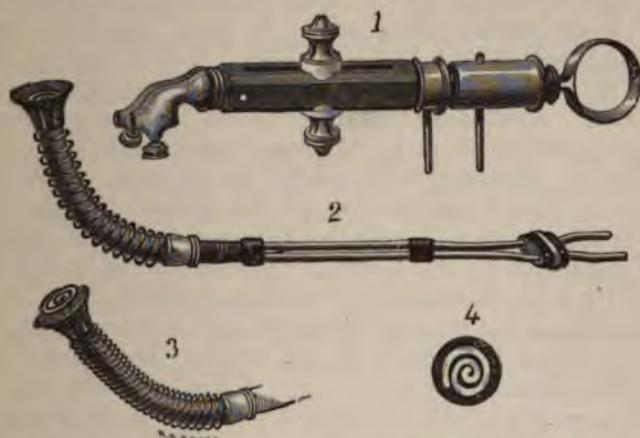


FIG. 84.—Lincoln's Galvano-caustic Electrode and Leiter's Handle.

to be perfectly adapted to either solid caustics or to liquid ones, which would saturate a piece of sheet spunk or cotton-wool placed between a disk, which would cover the spring of the holder and its distal extremity, both of which should be made of some substance which would be unaffected by the action of corrosive agents. As a further protection to the patient, if required in any particular instance, an outer shield in hard rubber might be arranged, somewhat after the manner of one presently to be described, upon an ingenious galvano-caustic electrode, devised for operations in the region of the naso-pharynx by Dr. R. P. Lincoln, of New York. The description of this instrument, with a figure, appeared in the *New York Medical Record*, December 30, 1876. It was first employed by Dr. Lincoln in the treatment of a large naso-pharyngeal polypus. Since that time, Dr. Lincoln has been very successful in treating, by

means of this instrument, another formidable case of naso-pharyngeal polypus and several cases of hypertrophied glandular tissue of the vault of the pharynx. A somewhat similar instrument * has been used by me, with great advantage, in burning away entirely the enlarged follicles in specially aggravated forms of chronic follicular disease of the naso-pharyngeal space, in which applications with fused nitrate of silver, or some other more active caustic agent, had proved insufficient to obtain a radical cure. I give herewith the figure of Dr. Lincoln's instrument with its description in the words of the author † (Fig. 84).

“ 1. Leiter's universal handle. 2. Electrode, on which is fixed a spiral spring, terminating a shield of bone, concealing a platina disk, which terminates the electrode. 3. The same, with the disk disclosed by the recession of the shield when pressed against the diseased tissues in the act of cauterization. The shield serves to protect the surrounding parts in case the instrument is grasped by them during the operation. 4. The disk in its relation with the shield. The above figures are one-half the size of the original.” Preceding this description, Dr. Lincoln made the following important remark: “ In some cases the shield described below may be dispensed with, either on account of the patient being able to avoid contraction of the palate during an operation, or when it can be controlled by some retractor, as the rubber cord suggested by Dr. Wales.” The electrode, in the form of a disk, of Dr. Lincoln appears to me better adapted, as a rule, for cauterizations in the naso-pharyngeal space than the one of Dr. Shurly, as shown (Fig. 61, 2 b). Of course, there may be cases of ulcerative diseases, or of enlarged follicles, occupying a very small area, which could be treated with more accuracy by Dr. Shurly's electrode, or again, as it appears to me, when the case is almost cured, but with still one or more spots close to the lateral pharyngeal walls which require cauterization.‡ “ For applications at the vault of the pharynx and posterior nares, Dr. Shurly uses (Fig. 61, 2, a and b) either a long electrode or knife, insulated, except at the extremity, which is passed through from the anterior nares and applied to the part under the guidance of the rhinoscopic mirror, or curved electrodes with platinum points, constructed so as to pass through the mouth and up behind the soft palate to the point or points to be touched.”

Dr. Shurly says, further on, that perfect control of the electric current may be obtained by using a handle with a spring switch (Fig. 61, 3), easily managed by the operating hand, such

* *Vide* note, Section on Treatment of Adenoid Vegetations.

† Naso-pharyngeal Polypi, by Dr. R. P. Lincoln, of New York. *St. Louis Medical Journal*, November, 1879, p. 461.

‡ *St. Louis Medical and Surgical Journal*, January 5, 1880.

as has been made for him by the Detroit Electrical Works. Since writing this description, I have had occasion many times to apply a heated platina disk to hypertrophied glands of the naso-pharyngeal space, which had been almost constantly the seat of hardened and foul crusts during several years. I have found the *electrode* of Dr. Lincoln, with shield of bone, too long and bulky to be of any use. Moreover, the curve of its distal extremity is not enough of a right angle to reach properly the diseased parts, and the margin of the bony shield presses against the pharyngeal wall in an oblique direction, so as to prevent the direct coaptation of the heated disk with the enlarged glands, when pressure is made at Leiter's handle. A smaller disk, without shield, or with one made of the outer layer of asbestos, curved almost at a right angle, works admirably. The pain of the application is slight, and after its moderate use the glandular surface is redder than usual, with a dull, grayish border, of irregular outline. Absorbent cotton, wound with cotton thread is employed advantageously as an insulating substance for the shank of the electrode.*

Finally I would direct attention to the use of the galvanic current in the treatment of post-nasal catarrh, especially when it is accompanied by a considerable degree of hypertrophy of the mucous membrane covering the turbinated bones, or by marked enlargement of the follicles of the naso-pharyngeal space. By certain authors it is said to be very efficient. In fact, a recent writer † speaks of it in the following eulogistic terms: "Of all therapeutic remedies I value none more highly than electricity." Beard and Rockwell ‡ remark that "subacute and chronic inflammations of mucous membranes are susceptible of electrical treatment, may indeed be permanently as well as temporarily relieved by it, though but rarely does it work an entire cure unless aided by other measures." Further on, they report a case (CCXXI.) of nasal catarrh, of a most persistent and annoying type, in which complete and permanent recovery resulted under local galvanization. They also relate two cases of anosmia; one of which improved under treatment by local faradization, the other recovered under localized galvanization. In both cases it had existed several years. Whenever electricity is employ, the nasal electrode (Fig. 85) should be attached to the negative wire of the battery, and introduced well up into

* This means, I believe, was first employed by Dr. Benjamin F. Dawson, of New York. In Dr. Seiler's galvano-cautery instrument, vulcanized fibre is employed as an insulating substance. This fibre is made of vulcanized rubber and paper. It is very durable and unaffected by heat; hence it answers admirably for the purposes of insulation.

† The Treatment of Post-nasal Catarrh, by W. R. D. Blackwood, M.D., Philadelphia Medical Times, November 8, 1879, p. 57.

‡ Medical and Surgical Electricity, pp. 682-85.

the nasal passages, while the positive sponge electrode should be applied over the nose exteriorly, or along the side of the face and neck. The number of cells employed must not exceed three or four, at least for the first applications of the current, and the duration of the application should not exceed five or ten minutes. The introduction of the electrode will usually occasion a paroxysm of inconvenient sneezing, followed sometimes by more or less giddiness.

The faradic current may also be employed in a similar manner with the galvanic current, and sometimes with excellent results. The two currents may be employed alternately, on different days.

By the frequent use of these electrical applications, during several weeks or months, the parts implicated may be restored to a state of healthy nutrition. Through their influence over some of the peripheral branches of the fifth cranial pair of nerves, the absorbents are made to act more energetically; effused serum or plastic deposit is in this way removed, and permanent benefit has resulted to the patient.*

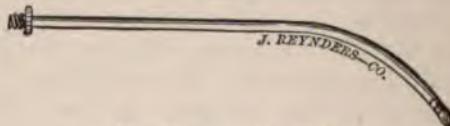


FIG. 85.—Nasal Electrode.

In conclusion, I give it as my opinion, that local medication is of service in diminishing the thickening, and effecting healthful alterations in the patches of mucous membrane situated around the glandular orifices, and thus counteracting the morbid influence upon surrounding parts produced by the secretion of the mucous glands themselves. I do not believe, however, that it accomplishes much, in so far as the glands are concerned; and in order to bring back these primitively diseased structures to their normal state, it is essential to have recourse to the internal use of special drugs, and what these should be, in my estimation, I have stated. To this view I would make exceptions for a few rare and aggravated cases, which have resisted other methods of cure, and in which the border line

* I have had several cases under my care in which I have employed the galvanic and faradic currents. In two the applications were frequently made, and continued during many weeks. In one case my patient affirmed that the applications of electricity had been of more service in lessening the amount of mucus secreted in the naso-pharyngeal space than any other treatment he had previously tried. This patient, besides the use of different powders, had been subjected to repeated cauterizations. I have found a mild faradic current from Fanning & Talbot's battery, No. 3, more agreeable to, and borne more readily by the patient, than a very mild current from the galvanic battery (Galvano-Faradic Co., 24 cells).

seems to be reached that separates chronic follicular disease of the naso-pharyngeal space from adenoid vegetations of the vault of the pharynx, and in which I resort to direct applications of sulphate of copper, fused nitrate of silver, etc., having abandoned as useless all internal general medication. In other instances, I am still of the opinion that, by a combined general and local treatment, carried out intelligently and persistently, we may fairly hope to alleviate all, and to cure many, of our patients suffering from follicular disease of the post-nasal space. I do not believe in the possibility, for the present, of attaining such good results in any other way.

NOTE.—Read at page 7, the seventh line from the foot, after the words "thirty years ago by Kohlrausch," the following note:

In an article entitled "Historical Notes on the Discovery of the Nasal Erectile Tissue," which appeared in the Boston Medical and Surgical Journal, January 1, 1885, by Dr. John N. Mackenzie, of Baltimore, it is conclusively shown that this tissue had been described long before Kohlrausch mentioned it. No one, however, prior to Bigelow, of Boston, gave such an accurate and complete description of it as Cruveilhier did in the second edition of his great work on Pathological Anatomy, vol. iv., p. 55, published in Paris, in 1845. Despite this fact, it is still true that "to Bigelow belongs the credit, not only of giving the best description of this tissue, and of more accurately defining its minute structure and extent of distribution, but also of showing that the so-called periosteum of the posterior part of the septum is in reality an erectile tissue." Henle, and more recently, Zuckerkandl, have pointed out that the turbinated "corpora cavernosa" of Bigelow, "may be with more propriety classed among the contractile as contra-distinguished from the erectile tissues" (loc. cit.).

I regard the "New Variety of Chronic Nasal Catarrh," described by Dr. Harrison Allen, of Philadelphia,* as being merely the first stage of atrophic rhinitis, in certain persons of lymphatic constitution, upon which is grafted a well-marked state of anaemia.



PART II.

CHAPTER X.

AURAL COMPLICATIONS OF CATARRHAL INFLAMMATIONS OF THE NOSE.

IT is at once a remarkable and a lamentable fact, that those physicians who have devoted special study to affections of the nasal passages, have hitherto been somewhat ignorant, or neglectful of the aural complications. Yet these complications, particularly in the inflammatory conditions of the pituitary membrane, are relatively frequent. When they do occur, they are always important. More than other specialists, except the aurists, therefore, it behooves the rhinologist to be familiar with their symptoms, course, and treatment. This subject may be properly divided into : I. *Aural complications of acute catarrhal nasal disease.* II. *Aural complications of chronic catarrhal inflammations of the nose.*

I. AURAL COMPLICATIONS OF ACUTE CATARRHAL INFLAMMATION OF THE NOSE.

It is a somewhat frequent occurrence to hear patients, affected with acute rhinitis, complain of more or less uneasy sensations in the ears. Sometimes it is a feeling of fulness, as if their ears were stuffed with a foreign material. Again, there is a sensation, which renders it almost imperative for the patient to rub or dilate the external auditory canals with the fingers. At times the patient will expand forcibly the membrane tympani with each effort at blowing the nose ; again, the nose will remain obstructed on either side for a time, and then in a sudden manner it will become pervious, and the ears from being completely clogged, as it were, will seem much lighter or freer than usual.

Evidently, in these cases, while for a time there was no air-renewal in the middle ear through the Eustachian tubes, finally this communicating channel for the interchange of air was opened, and immediately the intra- and extra-tympanic atmospheric pressure were equalized, and sound-waves could be felt and disseminated in a more normal manner.

In rare instances, accompanying or following an attack of acute rhinitis, I have remarked an evident inflammatory condition of some intensity propagating itself to the middle ear. This inflammation is marked by real pain in the ear itself, by a red and injected appearance of the drum-heads and of the inner ends of the external auditory canals.

Sometimes the complication is much more marked on one side than the other; sometimes both membranæ are about equally affected. In no instance, that has come under my observation, has an *acute coryza*, limited to the pituitary membrane, been the direct occasion of suppuration in the middle ear and perforation of the drum-head. Such an unfortunate sequel may and does occasionally occur, but not often, happily, and we should, as a rule, only dread its advent when the rhinitis is merely one manifestation of an acute attack of influenza, in which the entire mucous tract of the nose, throat, eyes, ears, larynx, and bronchi are all more or less implicated at nearly the same time. Under the latter circumstances it is indeed not very rare to encounter, here and there, a child or adult who has had a perforation of the drum-head with long-continued purulent discharge from one or both ears. Unless the patient has a constitutional defect, is poorly nourished, or neglected by nurses or parents, such instances cannot but detract from the renown of the attendant physician.

II. A.—AURAL COMPLICATIONS OF THE HYPERTROPHIC FORMS OF CHRONIC CATARRHAL INFLAMMATORY CONDITIONS OF THE NOSE (HYPERSTROPHIC RHINITIS).

It was, for quite a long time, a somewhat general impression among rhinologists, and, I may add, I shared this belief, that chronic inflammatory affections of the nose in which there was a considerable degree of thickening involved, were more likely to be accompanied, or followed, by inflammatory diseases of the middle ear, than those nasal diseases where no evident thickening of tissue was present. This was especially true of all obstructive forms of nasal catarrh, in which one or both nasal passages were almost completely occluded. It was assumed—incorrectly I now believe—that the deviation of the nasal septum toward the left, and the consequent obstruction of the left nasal passage, was the determining cause of left-ear deafness: the explanation of this effect being the fact that a proper inflation of the middle ear was thus prevented, and in consequence that the external atmospheric pressure of the membrana tympani was not equally balanced by the tension on the drum membrane from the air contained within the tympanic cavity. Unfortunately for the truth of this explanation, it has been observed that even when impairment of hearing existed in conjunction

With deviation of the nasal septum, the defective ear was not always situated on the same side with the obstructed nasal passage. Besides, it has been remarked that notable diminution of auditory power is *not* an essential and invariable consequence of an obstructed nasal passage. Sufficient air can be inspired through the non-occluded nasal passage to supply the middle ear with its share of this fluid. As to the belief that obstructive forms of nasal catarrh—whether they be of simple or specific nature—are more frequently followed by aural disease than those forms which are atrophic in character, this statement is certainly open to question. That they are frequently accompanied by acute, subacute, or chronic inflammatory disease of the middle ear is only what we have all more or less become familiar with. Sometimes the aural inflammation is unquestionably but an extension of the inflammatory process from the nasal or nasopharyngeal mucous membrane directly to the Eustachian orifice or tube. Sometimes, however, both in children and adults, the same causes which give rise to the morbid process in the nasal passages and upper portion of the pharynx occasion, at the same time, an inflammatory condition of the Eustachian orifice and tube. In no other way can we account satisfactorily for those very sudden attacks of acute otitis media, so painful in character, and which, in children particularly, are the direct result of a cold contracted and as it were grafted on, an old inflammatory condition. In adults it is more useful to notice that an acute exacerbation of a chronic coryza has persisted for several days before the ears are sensibly and painfully affected.

While this statement is correct, it still remains true, that by close questioning and by careful examination we can sometimes find sufficient proofs already of a commencing aural inflammation, when the patient himself is undoubtedly unconscious of the fact. If an aural inflammation accompanies an inflamed condition of the nose, which is obstructive in character, the occluded nasal passages, so long as this condition persists, are an efficient factor of its aggravation. It behooves us, therefore, to free the nasal passages as speedily as we can do so, with a due regard for our patient's present and future welfare, and thus we help to lessen or abort the aural inflammation. Rarely do we see in our clinics, or in our private offices, patients in whom obstructive nasal catarrh has been followed by perforation of the drum membrane. Fortunately, the otitis media usually falls short, or does not reach this culminating point. When one, or both ears,

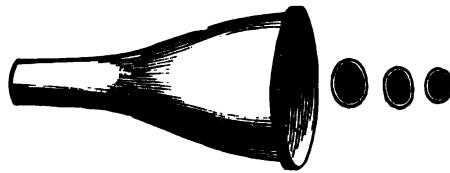


FIG. 86.—Gruber's Speculum (Roosa).

become affected in this form of nasal disease, it is incumbent upon us, not merely to inspect the external auditory canal and drum-head by means of the aural speculum, but also to make a careful rhinoscopic examination of the condition of the naso-pharynx and the Eustachian orifice. Usually, the naso-pharyngeal space will be found to contain more or less white or yellowish viscid mucus, or indeed, a certain amount of muco-pus. The lips of the Eustachian orifice are generally swollen, red, and oedematous. Sometimes, they, too, are coated with some of the same kind of secretion which we have remarked in the naso-pharynx. More frequently a slight grayish coating is alone remarked upon the inner aspect of the lips of the Eustachian orifice. The opening itself seems more than normally large; at times it is apparently somewhat contracted. If we attempt to inflate it according to Politzer's method (Fig. 87), we frequently are obliged to make more than one attempt before we can blow a sufficient quantity of air into the middle ear. After several vain attempts I have often been obliged to recur to the vapor of a few drops of chloroform which had been poured on the sponge in the receptacle attached to the rubber tubing connected with the air-bag. In these cases it is rarely necessary to use the Eustachian catheter in order to inflate the middle ear properly. Occasionally, however, it is found that the mere introduction of the Eustachian catheter (Fig. 88) will clear the Eustachian orifice considerably, and allow inflation, by means of Politzer's bag, to be made afterward much more effectually (Roosa).

FIG. 88.—Eustachian Catheter, *actual size*.

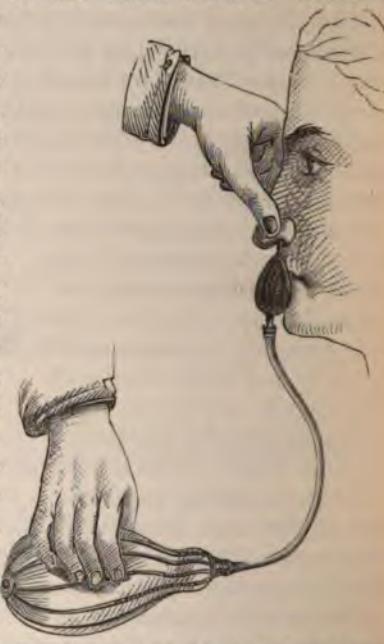


FIG. 87.—Method of Using Politzer's Apparatus, with Box for Containing Iodine or other Evaporating Substance (Roosa).

The Eustachian orifice is never ulcerated, unless it be in advanced syphilitic or strumous disease. Enlarged follicles may occasionally be seen in its vicinity, just as we find them often developed upon the posterior wall of the middle pharynx. If the external meatus and drum-head be inspected under a good light we often find the auditory canal blocked by impacted cerumen, and until this be removed, we cannot make a careful examination. When the ear-wax has been got rid of by means of the syringe, or probe, or other suitable instrument, we are able to examine the organ to better advantage. Then it is that we remark a thick, somewhat opaque, drum-head. Around its outer margin and extending for a line or two in the external au-

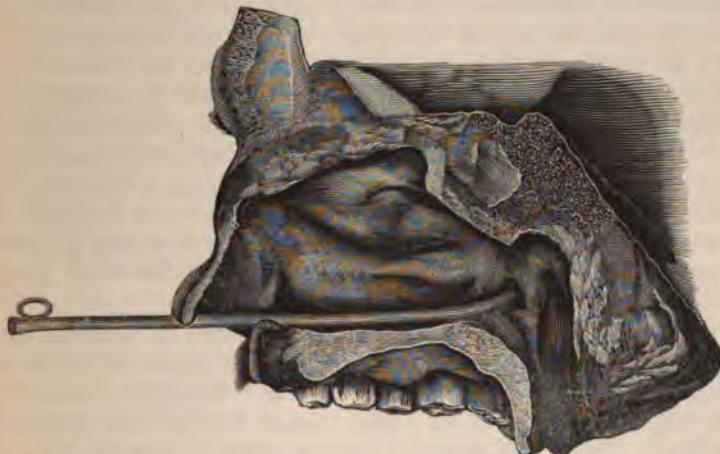


FIG. 89.*—Vertical Section showing the Mouth of Eustachian Tube and Rosenmüller's Fossa (Roosa).

ditory canal, there is plainly an inflammatory rim, and when this is the case, the patient shows signs of slight pain when the speculum is introduced even with great care. Often, also, the drum membrane itself is of pinkish coloration, and abnormal vascularity is seen on either side of the arm of the malleus. The external auditory canal, in nearly its whole extent, may be covered with a furfuraceous deposit, which is nothing more than a large number of epithelial cells which have become detached from the cutaneous lining and form so much débris. This epithelial débris is accompanied by annoying itching, and, at times, is evidently due to an eczematous condition of the canal, or, indeed allied with diffuse thickening of the skin of the canal, inflammatory in nature.

Sometimes these patients are great sufferers from certain

* Fig. 89 shows, also, the position of the Eustachian catheter when its distal extremity is inserted into the orifice of the Eustachian tube.

concomitant symptoms. These are pain, vertigo, and noises in the ears. The pain is usually slight; sometimes it is a mere sensation of fulness. Occasionally slight pressure in front of the external auditory canal increases it. There is often a tendency to introduce the finger into the auditory canal and work it about so as to relieve the itching, fulness, or other uneasy sensations of which the patient is conscious. The noises complained of by the patient in the head, or affected ear, are not often very intense or painful. They are, however, more harassing at night and when the patient is lying down than during the day. They resemble many different sounds (ringing bells, roaring, etc.). The vertigo is often a symptom which causes considerable uneasiness. It may come upon the patient under all circumstances, when walking, standing, sitting, or lying down; at home, in church, in the theatre, in the street. They suddenly feel as if they were going to faint away, or fall, if they are standing when it attacks them, and are compelled to take hold of the nearest object for support. Frequently they consult their physician in regard to the vertigo, because they believe it depends upon the condition of their stomach, or because they are run down in health, and do not think of it being connected with any aural difficulty until informed of it by their medical attendant.

The hearing-power in these cases is more or less defective, according to the advance the affection has made in time, or in relation with the intensity of the attack. Usually a watch cannot be heard at more than eight to ten inches, and sometimes much less. Even at contact, I have known it to be barely audible. In the same way for the ordinary spoken voice. Sometimes, at a distance of twelve feet, the voice is heard with some difficulty, and again the voice is heard when one is quite far removed, while the watch is only heard when brought within a few inches of the affected ear. I have known these patients to vary considerably in their hearing-power during the course of the day. In the morning, when they first awake, and sometimes for two or three hours afterward, they are much stopped up and can hear very imperfectly. Later on in the day, and when they have blown from the nasal passages a considerable amount of thick mucus of different color, they are relieved, and can hear much better. Instead of having their ears completely blocked up they seem to open, or become permeable. Under these circumstances, with each effort of blowing the nose, the air is sent forcibly into the affected middle ear and occasions very unpleasant crackling sensations, no doubt due to the contained mucus in its cavity. The crackling in their ears is also very disagreeable, at times, as a subjective sensation, when they are

at meals and make efforts of deglutition. Both the full and crackling sensations are often greatly relieved, at least for a while, by the use, several times repeated, of Politzer's method of inflation.

II., B.—**AURAL COMPLICATIONS OF THE ATROPHIC FORMS OF CHRONIC INFLAMMATORY CONDITIONS OF THE NOSE (ATROPHIC RHINITIS).**

In my experience, these forms of nasal diseases are particularly prone, sooner or later, to be complicated with aural disease. The aural affection is ordinarily of chronic nature, rarely suppurative, and belongs to the class described by aurists as chronic non-suppurative inflammation of the middle ear. The nasal inflammation may have existed during several years before the patient appreciates that his ears have become damaged. Indeed, many of these patients are already very deaf in one ear at least, when they come under the care of the specialist in rhinology, and it is only after a careful examination of, and the use of tests in regard to, the condition of their power of audition, that they are willing to recognize how imperfect their hearing really is. They have never, or rarely, any notable degree of pain in their ears ; the tinnitus aurium has also been moderate in amount and not sufficient to incommod them much ; and as to their feelings of vertigo, these they have attributed to a disordered stomach, or liver, or indeed to the fact of being below par in general strength and health. It is only by questioning such patients closely at times, and even by insisting upon the nature and importance of the aural disorder, that we can make them appreciate its real gravity. Of course these are not the only cases, since we meet with a certain proportion of instances in which the patient is fully conscious of his loss of hearing and of the noises in the head, of vertiginous tendencies, which give him such legitimate anxiety. In these examples, however, it is believed that the sequelæ are the ordinary, natural results of catarrh, and having tried many prescriptions already of regular and irregular practitioners, without benefit, the sufferers themselves have naturally become suspicious and doubting in regard to almost every plan of treatment. Accompanying the chronic non-suppurative inflammation of the ear, we shall find an atrophied and dry aspect of the pituitary membrane. The secretions therefrom are relatively small in amount. Dry, thin, and quite fetid crusts, dark in color, are found adherent upon the septum and turbinate bones. Under these crusts, when detached by irrigation and forcibly blowing the nose, the mucous membrane is at times superficially ulcerated, bleeds readily, and has the aspect of a mammillated surface. In the naso-pharyngeal space larger masses of inspissated mucus, or muco-pus, form and are expelled by distressing efforts of scraping and hawking,

after more or less prolonged intervals. The space itself is of larger dimensions than normal, owing to atrophy of the soft tissues, so that posterior rhinoscopy is usually made with great facility by an expert examiner. Oftentimes there is marked development of the adenoid tissue of the vault of the pharynx. The Eustachian orifices are wider than normal, and may or may not be plugged by a certain amount of dry mucus. If they are so obstructed, inflation by means of the Politzer bag is often difficult, sometimes almost impossible after several successive attempts. Indeed it is not thoroughly accomplished, at times, until we make previous use of the Eustachian catheter, when it usually becomes a relatively easy and satisfactory procedure. In these cases, as well as in *all* those in which we are in doubt as to whether there be obstruction either in the middle ear, or the Eustachian tube, the proper use of the tuning-fork has great diagnostic value. Whenever the aërial conduction of vibrations with the tuning-fork (Fig. 90) are well heard, no such obstruc-



FIG. 90.—Tuning-fork (Roosa).

tion exists. On the contrary, whenever these vibrations are diminished and bony conduction is increased, we always have obstruction in the parts referred to. The posterior extremities of the turbinated bones are ordinarily of a grayish aspect, smaller than normal, and permit of satisfactory inspection of the choanae. The median post-pharyngeal wall has a dry, glazed aspect, which almost always betokens the condition of the organs just described, and at the same time is accompanied by very considerable fetidity of the expired breath. The tonsils are small in size; the soft palate pale or red, and injected with numerous small vascular twigs, but never thickened or oedematous. If we inspect the drum-heads on either side, we find them dull, opaque, thickened, and very markedly depressed. The ossicula beneath are often ankylosed, and do not transmit the sound-waves as they should, owing to the plastic exudation between and around their joints. Further, the membranæ tympani have lost their elasticity, and are not as impressionable or easily moved by a strong current of inflated air as they are when in a normal condition. Naturally, under these circumstances, the patient's hearing power is much diminished, and all the rational symptoms of aural impairment are very pronounced. These are tinnitus of different kinds, vertigo, and more or less uneasy or even painful sensations in the middle ear itself.

Now that I have endeavored to give an account, although of necessity a brief and somewhat imperfect one, of the most prominent physical conditions present in the preceding cases, I shall say a few words in regard to *rational treatment* in children and adults.

NOTE.—In what I have written, I have only considered those cases of throat deafness which depend essentially upon the pre-existence of various forms of acute, or chronic catarrhal inflammation of the nose and naso-pharyngeal space. It is proper, however, to remind the reader that there are other forms of throat deafness, in regard to whose existence he should be alive: First and most important, there are those instances, originally described by Weber-Liel,* in which the affection is evidently of nervo-muscular origin. It may be central, reflex, or situated in the vaso-motor system. The tensor palati muscle may become paralyzed, and on this account the tendency may exist of falling together at the orifices of the Eustachian tubes. In these cases, the drum-membrane is considerably sunken, and the hearing greatly diminished. Some authors question this opinion and regard the sunken drum-membrane as the primary factor and the falling together of the Eustachian orifices as wholly secondary (Roosa). Further, the ossicles become more or less ankylosed, owing to the excessive production, and later contraction of connective tissue in the middle ear. When, however, the tensor tympani is also paralyzed, the drum-membrane does not lose its vibratory function to the same extent, inasmuch as the two muscles, as it were, balance themselves, and the auditory function is only slightly impaired.

The prognosis of the former cases is very grave, as our ability to improve the state of the patients is very limited. Besides the examples of throat deafness connected with nerve lesions, we have a certain number which depend upon syphilitic ulcerations and gummata; upon turbinate hypertrophy and bony exostoses, etc., all of which may, by producing stenosis, either by cicatrical contraction or direct pressure, bring about loss of audition. The therapeutical measures to be employed successfully are indicated clearly by the pathological state which is present.

1. Let me consider the *acute cases*, or those in which the aural affection follows closely upon a sudden inflammation of the mucous membrane lining the nasal passages. In this condition of the ears, which is that of acute or subacute catarrh, no measure is of more decided value, both in relieving pain as well as ultimately diminishing the inflammatory process in the ears, than douching the ears repeatedly with warm water by means of the fountain syringe. This form of douche may be employed every hour or two, for the space of five or ten minutes, if required, or until pain has greatly abated. Oftentimes before the bag of the fountain syringe has been entirely emptied once, the patient will express a sense of great comfort. The well-being, indeed, established in this manner, is sometimes quite astonishing, and this is true frequently, when previous to its application many household panaceas had been resorted to with little or no benefit. If the douche fails, as it occasionally will do, and no lasting result is obtained, either in the diminution of pain, or in lessening the inflamed condition of the ear, it is essential to apply one or two leeches in front of the tragus, and draw blood

* Ueber das Wesen u. die Heilbarkeit der häufigsten Form progressiver Schwerhörigkeit .
Berlin, 1873. Cited by Mackenzie, vol. ii., p. 372 et seq.

from the congested vessels of the ears. Ferrier's snuff may be blown freely into the nasal passages on either side, and a solution of chlorate of potash with a small proportion of tannin and glycerine in water may be used as a gargle,* or direct throat-application. The bowels should be moved by a moderate dose of mass. hydrarg., followed by Rochelle salts, and an anodyne of paregoric or morphine given at night to promote quiet sleep. With this plan duly carried out we shall rarely see such cases last, in their acute form, beyond twenty-four or forty-eight hours. In children who are restive, or somewhat difficult to manage, small but repeated doses of aconite may, at times, be employed with excellent results, as regards the diminution of the generalized congestion of the affected parts, and may in a certain measure take the place of the other medicinal agents first recommended, with the exception of the continuous douche, which should be invariably brought into use, if possible. A few children are frightened very much, at first, by its application, but soon lose their dread of it when they have experienced the great relief from pain afforded by its employment. After the use of the douche the external auditory canal should be dried with absorbent cotton wrapped on a holder, and the ears kept moderately warm by a piece of cotton-batting laid over the auricle and the auditory canal itself.

2. *Treatment of aural complications of hypertrophy of mucous membrane lining the nose.*

The first thing to be attended to is to make the passage-way through the nose free, so that the patient may have an easy and satisfactory nasal respiration. This may be done quite readily in one of three ways:

- (1.) By application of acids, of which nitric acid, monohydrated, is, in my experience, the most reliable.
- (2.) By the galvano-cautery.
- (3.) By Jarvis' wire snare.

To the first I give preference in cases not far advanced; to the second, in instances in which occlusion is more considerable; and to the third, in examples where the posterior extremities of the turbinated bodies are particularly the cause of obstruction and the other two methods lead to only partial good results.

In some cases, also, I now believe the use of the dentists' treadle and burrs † of different shapes may, when skilfully manipulated, be decidedly useful, or indeed radical, in overcoming nasal obstruction. After the obstruction through the nasal pas-

* The method of gargling is not unimportant. The one first recommended by Von Trötsch, and afterward described by Roosa (*vide* Treatise on the Diseases of the Ear, 6th ed., New York, 1885, p. 391), is without doubt the best.

† See Treatment of Deflections of Nasal Septum and Bony Obstructions of the Nose.

sages is cured, we should immediately set about making proper alterative applications to the naso-pharynx, so as to reduce the thickened condition of the mucous membrane lining this cavity and the neighboring parts, and to place the throat ultimately in a much better general condition, and, in a measure, to indirectly help the aural complication. In this manner, the duration of the disease may be shortened, and its gravity, as regards sequelæ, considerably lessened.

Here, again, it is also desirable, if there be some pain and stuffiness present, to inflate the ears twice a day for a week or so, and if the pain become, despite the use of Politzer's method, more severe and harassing, to recur to the use of the aural douche in the external auditory canal several times a day, and perhaps to apply two leeches, on one or two occasions, in front of the tragus of the affected ear.

I have more than once greatly benefited noises in the head, in these instances, by the use of hydrobromic acid in quite large doses, as advised by Woakes; and pain in the ears by salicylate of soda in mixture, whenever I have suspected an underlying rheumatic dyscrasia.

Sleep is usually not interfered with, nor is an anodyne required. Of course, in every case where adenoid vegetations of any size are present in the naso-pharyngeal space, they should be removed by an appropriate operation.

3. *Treatment of aural complications of atrophic inflammatory conditions of the nose.*

In these instances careful continuous treatment is particularly necessary—not so much, frequently, to restore the hearing completely, nor indeed to improve it always in a great degree. It is rather to be considered essential, because unless attended to, the patient may become so deaf as to be debarred from all social enjoyments, or have a professional career altogether arrested. In these cases the naso-pharyngeal condition must be treated with suitable applications every day or every other day. Among these I know of none so grateful to the patient and so useful in the disease as that of carbolic acid, borax, glycerine, and water, in more or less large proportions, and employed either by direct topical use with the brush, or by means of Sass' spray-producer. These applications remove the sensations of dryness and irritation from the upper pharynx, and soften and otherwise change advantageously the character of the secretions. Preceding the use of the spray, I consider it very important to inflate both ears by Politzer's method, or by introduction of the Eustachian catheter. Twice or three times a week is usually, after the first week or two of treatment, often enough to inflate the ears. Sometimes the introduction of the Eustachian cathe-

ter (Fig. 91) is absolutely required, in order to render this inflammation at all thorough and effectual. In these cases I am of opinion that, the use of the douche or posterior nasal syringe is usually hurtful ; for, while I do not believe they are so apt to aggravate directly the already existing morbid affection of the ears as when the nasal passages are obstructed, still I am confident they increase very considerably the *quantity* of secretion in the post-nasal space by occasioning a considerable degree of artificial irritation, and hence I do not consider their use advisable.

Sometimes in these cases, especially where there is an evident rheumatic constitution, I have known moderate doses of



FIG. 91.—The Eustachian Catheter in Position (Roosa).

salicylate of soda, taken internally, to be of great benefit. Further, I am satisfied, by several examples already observed very closely among my private patients, that a season at some one of the sulphur springs of France, or this country, is of very great utility in benefiting the aural condition and hearing power of these patients. From my own experience, I am inclined to recommend Aix-les-Bains, in Savoy, as a charming and especially recommendable resort for those persons who are thus affected. I believe the efficacy of these waters is due to two causes : first, that all the arrangements for bathing, massage, inhalation, atomization, douches, and general hygiene, are excellent ; second, that the water itself may be drunk in fairly large quantities, and thus be rendered useful through the different natural emunctories, without affecting injuriously the digestive organs.

the reason being that these waters contain a far less proportion of insoluble sulphate of lime than do our own sulphur waters of Richfield and Sharon.

These statements are not empty theories, but such as several important facts have strongly corroborated.

In conclusion, I would urge in very strong terms the necessity of rhinologists guiding and directing their patients more than they usually have done, and continue to do, in regard to the hygiene of their ears. A case of moderate nasal catarrh, of the hypertrophic or atrophic sort, is not of itself such an important disease, particularly if we merely view it as regards the amount or character of the sputa that a patient expectorates daily. The same is true of the sensations of dryness or stuffiness of which many catarrhal patients complain, and indeed come to the specialist to be relieved of. But when we reflect upon the risk to the ears, eyes, and olfactory sense which is frequently incurred, when we discover that the hearing, sight, or smell is already more or less defective and weakened, it behooves us, one and all, to impress these facts forcibly on the minds of our patients, and either to give them the careful, judicious, and learned attention their cases imperatively require, or else to direct them to some prominent otologist, who shall do for them what is *most* important for their welfare.

Speaking as a rhinologist, I can but earnestly wish that *all* rhinologists may be hereafter qualified to attend to what is as surely in their particular line of work as in that of any other specialty.

CHAPTER XI.

DEFLECTIONS OF THE NASAL SEPTUM AND BONY OBSTRUCTIONS
OF THE NOSE.

I. DEFLECTIONS OF THE NASAL SEPTUM.

IN very few persons do we find, upon examination by means of the nasal speculum, a perfectly symmetrical septum, dividing the nasal passages into cavities of equal dimensions. In the great majority of instances, on the contrary, it is easily discovered that there exists a more or less marked deviation of this wall to the left or to the right side. Frequently the amount of the inclination, or bending, is insufficient of itself to produce any notable phenomena due to obstruction of one or other nasal fossa. Under these circumstances, therefore, it is unnecessary and unwise to interfere with what should be regarded as a mere defect of conformation without implying any annoying or grave consequences. When, however, the deflection is of such a kind and degree as to occasion marked obstruction in nasal respiration, and when, as is usual under these circumstances, a notable disfigurement is occasioned, there is sufficient reason to palliate or remedy the morbid condition by some operative procedure.

There are, also, a certain proportion of cases in which the deflection of the septum has never caused any unpleasant symptoms until we find added to it more or less hypertrophic catarrh. At this time, partial occlusion of one or both fossæ takes place, which is allied with inability to breathe comfortably through the nose, pent up nasal secretions, and occasionally fetid odor of the breath. If the case is allowed to continue without suitable treatment, too often obstinate naso-pharyngeal catarrh with its usual sequelæ of defective hearing, olfaction, and gustatory sense, is apt soon to follow.

The causation of deflection of the septum is frequently obscure. At other times, the efficient or probable cause is readily discovered. It may be that the defect is a congenital one, and that in youth it has never been in any manner remarked. To this, in later years, and after repeated attacks of acute rhinitis, may be added catarrhal infiltration with thickening of the soft overlying tissues. A blow, or fall upon the nose, at some period of youth or adult life, is often an assignable cause of unques-

tioned significance.* As to the possibility of occasioning the deformity by a peculiar habit of blowing the nose, I doubt its power, except very exceptionally, to do more than slightly to exaggerate a pre-existing defect. Many varieties of deflection have been described, several of these I have never seen, or never been able thoroughly to distinguish, by reason of the insufficiency of our methods of illuminating the entire superficies of the nasal passages.

Unquestionably the forms most usually encountered, and which are easily seen, are those in which the anterior portion of the septum is particularly affected. At times this is seen to be bulged, as it were, into one passage, under the form of a blunt cone or pyramid. On the opposite side there is a corresponding depression of tissue. Thus, while one nostril is much occluded, the other is more capacious than normal. The cone, or pyramid, in the obstructed passage, may be of large size and push out the ala of the nose, so that the outward conformation of this is disfigured. It is more convex than it should be, and by gentle pressure exteriorly the interior growth is felt. When the growth is so large as to produce this effect, it is sometimes difficult, and even impossible, to introduce a sound of small size through the inferior meatus. Such considerable obstructions are, however, rarely encountered. More frequently, by dilating the ala by a Goodwillie's or other form of nasal speculum, we are able to pass such an instrument through the obstructed nasal passage. It is not unusual to find one nasal passage occluded in its lower part, and the opposite one filled up by a bulging of the septum in its upper region. Below this second bulging we have the concavity which corresponds with the lower deflection to which we have referred, and which resembles it very closely as regards its dimensions. Whenever opportunity has offered to make pathological investigation in similar instances, a section of the septum has shown an incurvation (Fig. 92) † not dissimilar to the letter S. Of the other forms I have observed that of long, somewhat irregular, oblique ridges, with sharply defined crests and deep furrows between, not unusual. The ridges may be, in certain instances, rounded at their outer surface and confound themselves anteriorly with the cone or pyramid of which I have spoken. To what extent other unusual conformations exist can ordinarily be only determined in an approximative way by the use of soft metallic sounds or flexible probes.

* Judging from his own experience, Dr. Clinton Wagner (*Diseases of the Nose*, p. 95) is led to believe that deflections of the septum are usually occasioned by a traumatism, and are rarely of congenital origin. He explains in this way the fact that he has encountered them oftener after the age of puberty than among young children.

† This figure gives a tolerable notion of such deviations. It should be observed, however, that in this drawing there is evident hyperplasia of cartilaginous tissue.

A successful operation for the anterior displacements will, also, enable us at times more correctly to determine the nature, extent, and configuration of the cartilaginous, or bony displacements in the posterior portion of the nasal fossæ. The nose, as regards its outward configuration, does not always show the extent, or the kind of change which exists in the septum. Occasionally, a patient will present himself in whom no deformity of

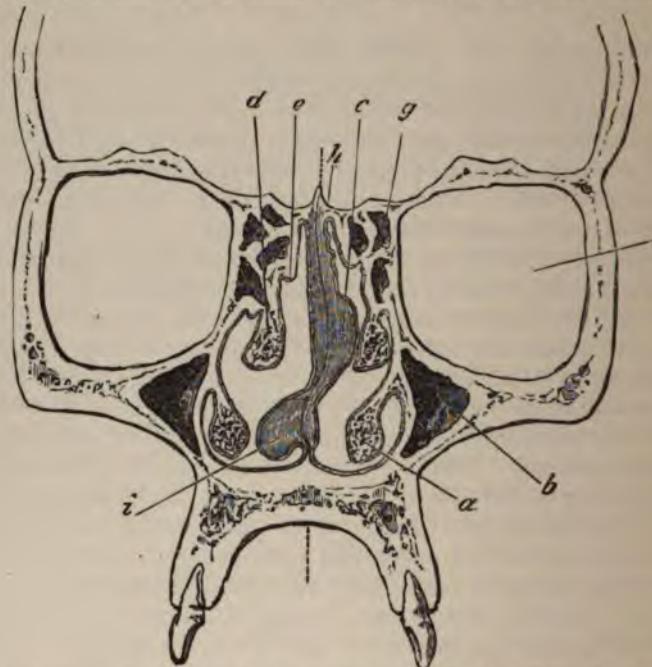


FIG. 92.—Transverse Section through the Nose, Seen from Behind; from a Wet Preparation Viewed from Behind (Woakes).

a, Inferior turbinate bone; *b*, cavity of antrum; *c*, septum, distorted and exhibiting hypertrophic outgrowths; *d*, middle turbinate bone; *e*, superior turbinate bone; *f*, orbit; *g*, ethmoidal cells; *h*, interior of cranium; *i*, large enchondrosis projecting into lower nasal fossa, and approaching right inferior spongy bone and floor of nasal cavity. A similar projection, *c*, on the opposite side of the septum, lies in contact with left middle spongy bone. This figure is typical, representing enchondrosis of the septum as commonly met with.

the nasal organ exists, and yet he will affirm that he is a great sufferer from continuous nasal obstruction, and, upon direct examination, it is discovered that the septum is carried to one side or the other enough to occlude a nasal passage. At times, however, it is true that instead of a deviation we find a considerable and tolerably symmetrical thickening of the septum itself, which produces obstruction on both sides to almost an equal degree. Deformity of the nose itself in its exterior outline, is occasionally a source of as great annoyance, as the real occlusion produced by a deviated or thickened septum. The tip,

or lower half of the nose in its vertical axis, may be inclined toward the right, while there is marked bulging on the left, through the lateral cartilaginous wall, due to the tumor of the septum beneath. Although this is a disfigurement frequently met with, it is not altogether rare to encounter an analogous deformity in which the tip of the nose is carried toward the left. The symptoms from which such patients suffer are mainly those which are readily accounted for by the nasal stoppage. In the first place there is a constant feeling of inability to breathe sufficiently through one, or other nasal passage. If the free passage be pressed upon gently with the finger so as to close it, in a very short time the breathing becomes oppressed, and is almost insupportable, unless the mouth be opened. Indeed, these patients rarely sleep without having their teeth and lips separated. Their breathing at this time is entirely carried on through the mouth, and they snore loudly and continuously. When they awake in the morning, or during the night, as they frequently do, they are conscious of great dryness of the fauces and pharynx, and their throat is irritated and parched. They usually become sufferers from naso-pharyngeal catarrh. Moderate secretion of tough, viscid, grayish, or greenish mucus, accumulates in the post-nasal space which they have difficulty in expectorating, and then only after repeated and harassing efforts of cough. They blow their noses ineffectually, for frequently no discharge is expelled in this way, and they feel choked, or stuffed up. Finally, by a fortunate and renewed attack of coughing and hawking, they are able to dislodge the offensive and intolerable mass of clinging mucus. These patients often complain of pains over the frontal sinuses, or above the orbits. Now and then it is of neuralgic character, coming on and disappearing even with slight changes in the weather. Again it is persistent and permanent, in character, and is never entirely absent, unless it be during the hours of sleep. It is not unusual to notice a deficiency in the olfactory sense, and sooner or later, aural catarrh is very sure to manifest itself. It may be that the aural complication never takes on an acute type. It may be that an occasional plugging up of the external meatus with impacted cerumen, and a few uneasy symptoms proceeding therefrom, are all the symptoms which ever direct the patient's attention to his ears. But this is not always true, for deficient hearing-power, and distressing tinnitus, which are unrelieved in a permanent manner, until the septum is straightened, are not infrequently encountered.

Colds are common, especially those which affect the nose and throat, and whenever an attack of laryngitis or bronchitis declares itself in a patient with this deviation, they are not

easily cured, but are prone to last a considerable time. Several operative procedures have been praised at different times, and by distinguished writers, to do away with deformity of the cartilaginous septum.

The oldest to which we desire to call attention at this time is that of Blandin.* This eminent surgeon used a form of punch (Fig. 93) with which he removed the salient portion of the sep-



FIG. 93.—Blandin's Punch for Use in Deviation of the Septum.

tum, in a manner not dissimilar to that of a shoemaker who punches a hole through a piece of leather. The objections to this operation are several: First, the punch is apt to cut imperfectly through the septum, so that there is some difficulty in separating completely the *disk* of cartilage covered with mucous membrane after the punch has been closed upon it, as it very often is attached by some shreds, or filaments, to the parts which are left; second, a permanent hole is left between the nasal fossæ. The margin of this opening is certain to cover itself with



FIG. 94.—Adams' Forceps for the Deposition of the Deviated Septum.

adherent crusts, which reform as soon as they are detached, and finally the border becomes inflamed and painful. Moreover, the operation is not in reality remediable, except in very rare instances, and the obstructing septum extends far beyond the small area of tissue which has been removed. Adams, of London, has endeavored in this deformity to straighten the septum by means of a forceps (Fig. 94) in which the blades are introduced separately into the nasal passages, and, after locking them, force is applied by means of repeated lateral movements, until

* *Compend. de Chirurgie*, vol. iii., p. 23.

the septum is broken up, and moved back to the median line. For three or four days subsequently, the septum is held in place by a retentive apparatus (Fig. 95) which prevents all change of



FIG. 95.—Adams' Screw Compressor Plates for Deviated Septum.

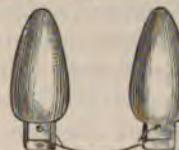


FIG. 96.—Adams' Ivory Plugs for the Nostril.

position by the septum. Later, ivory plugs are introduced (Fig. 96), and are worn until the cartilage has become firm. If the plugs press too forcibly, or during too great a length of time, they cause ulcerations, which are tedious and difficult to heal, owing to the low vitality of the cartilaginous wall with which they are in contact. The plugs should be removed every night, so that the nasal passages may be washed out by a warm carbolic douche. After a few nights, the number depending somewhat upon the apparent solidity of the septum, the plugs may be removed and a piece of sponge, or a small roll of cotton suffices when introduced



FIG. 97-1.—Forceps (Glasgow). Figure represents the instrument reduced one-half.

even solely on the obstructed side, to keep the septum in good position. In May, 1879,* a new way of making a stellated division of the nasal septum was presented to the medical profession by A. J. Steele, of St. Louis. According to this method, instead of removing a circular or oval piece of the septum, this wall is perfo-



FIG. 97-2.—Shield (Glasgow).

rated, or cut through by a number of divergent blades running outward from a centre like the spokes of a wheel from the hub (Fig. 97-1). There is little or no hemorrhage from this operation. After its performance the septum is easily replaced by the introduction

* St. Louis Courier of Medicine.

of an Adams forceps, or any strong, stout blade, and the subsequent treatment is very similar to the one I have just mentioned. The cutting blade of the instrument is covered with a shield (Fig. 97-2), which is designed to prevent incision of the nasal mucous membrane during its introduction, and which is detached and removed so soon as this blade has found its proper place. The guarded blade is always introduced into the unobstructed side of the nose, and the other blade into the closed nostril. The plugs of Steele are made (Fig. 97-3) with an anterior



FIG. 97-3.—Plug (Glasgow).

angular extremity, so fitted as to slide under and remain in the little sulcus existing at the inside and near the tip of the nose. If the ivory or ebony plug be too long it is apt to press uncomfortably against the lower turbinated bone, so as to shorten it. The operation of Steele, as that of Adams, may be performed with or without an anæsthetic. Usually, especially with women, it is preferable to deaden sensibility completely.

Dr. Sajous, of Philadelphia, has advantageously modified



FIG. 98.—Modification of Steele's Forceps (Sajous).

Steele's instrument (Fig. 98) by adding punches and blades of different shapes and sizes (Fig. 99) to the same instrument by means of an improved joint which renders each one of these easily adjustable. The blades can be separated in the same manner as obstetrical forceps.* After the incisions of the septum are made, the



blades employed can be removed, the punches and small blades detached, and the flat distal extremity of the instrument, used to straighten the septum, in the same manner as an Adams forceps. E. Fletcher Ingals prefers, in cases of deflected septum, to make an incision through the mucous membrane, from above downward and outward, over the anterior portion of the tumor (Fig. 100), as indicated by the line *a d* in the drawing. The mucous membrane is then separated and pushed aside by the handle of a scalpel, or with delicate curved spuds, and the incisions are made through the cartilage in the direction of the dotted lines *a b* and *a c*.

* This is similar in Steele's instrument.

Care is taken not to divide the lining membrane of the opposite nostril, and thus make the two nares communicate. Preceding this operation, which is sometimes tedious, it is important to give an anæsthetic, and to pass a nasal tampon into the posterior nares of the side to be operated upon. After the cartilage has been removed with a forceps, the mucous membrane is united by stitches and the cartilage supported by a plegget of cotton, or an ivory, ebony, or gutta-percha plug. A perforation through the latter would add to the comfort of the patient by affording him an open channel for breathing.* If there be any bleeding before the stitches are put in, syringing with hot water, or pressure by a tampon of cotton, will stop it. In all cases in which there is not simply a deviation of the cartilaginous septum near the anterior nares, but also an overgrowth of tissue, the operation of Ingals is superior to the use of Steele's forceps, or of the same instrument as modified by Sajous.

With his small straight blade, the last-named physician has performed a useful and ingenious operation, which consists in making four cuts so as to form an arrow-head in the anterior portion of a deviation. When the cuts are made, the arrow-head piece comes off, leaving its shape through the cartilage. Pressure being now exerted, the sharp end which stands out is brought down against the retiring angle and held there by plugs, or diminutive forceps. Such small cuts, the author states, are only adaptable in anterior deviations, but their number can be increased and the arrow-head made larger if necessary. Once he found it advisable to extend the lower line along the whole length of the *cartilage*, and obtained a very good result.†

While Ingals' procedure and Sajous' arrow-head incision are commendable operations in the instances which I have mentioned, I would also refer with satisfaction to the use of Jarvis' *écraseur* in similar examples. To manage these cases, Jarvis makes use of a series of transfixion needles with pointed extremities similar to Glover's needles, of different sizes and curves, all of which are provided with a light, serviceable handle (Fig. 68). A suitable needle having been selected, its pointed extremity is inserted into the cartilaginous projection,

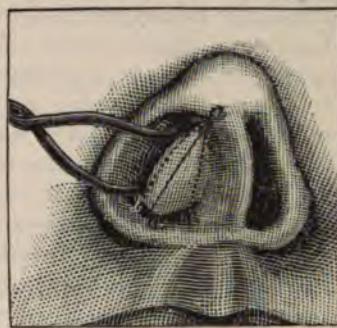


FIG. 100.—Ingals' Operation.

* This has been done by Mackenzie. See reprint from *Transactions of the Medical Society of Virginia*, 1883, p. 13, on *Deflection of the Nasal Septum and its Treatment*.

† Written communication.

or thickening, and pushed steadily through its tissue, until it appears on the other side of it, and projects into the obstructed nasal fossa. Around this needle-point, a properly adapted loop of fine piano wire is passed, and when the tissue is firmly seized by pushing forward the outer canula, the milled button is slowly turned until the projecting mass is completely severed. This is usually accomplished with but little pain, and the loss only of a few drops of blood. The operation may be repeated, if required, in two or three days, and continued at like intervals so long as any perceptible increase of the septum remains behind to cause obstruction of the nasal passage. It is essential in Jarvis' operation not to turn the milled button too rapidly, or a comparatively trivial and painless operation becomes one of considerable suffering. In order to fix and divide portions of the septum, Dr. Jarvis occasionally makes use of small scissors, one kind being made after the pattern of Richardson's mouse-toothed



FIG. 101.—Double-gouge Forceps for the Nose (Weir).

scissors, the other kind having a sharp beak upon the upper blade which sinks into the tissue of the septum, and thus enables the scissors' blades to retain their grasp while cutting through the cartilage. Whenever the deviation of the septum exists near the posterior portion of the vomer, the operation becomes very difficult, since the transfixion and snaring of tissue must then be done under guidance of the rhinoscopic mirror.

In spite of this difficulty Dr. Jarvis has been successful in opening nasal passages which were wholly imperforate posteriorly, and thus re-establishing normal respiration, besides ridding the patient of all the preceding distressing symptoms. In two cases I have excised portions from a projecting nasal septum with a small probe-pointed bistoury without any unpleasant consequences. This is the operation recommended by the late Professor S. D. Gross for such deformities, and also by Dr. R. F. Weir. This little operation has been found by the latter surgeon to be facilitated by using a small gouge-forceps mounted like a dressing-forceps (Fig. 101), and if the deflection is considerable, it is proper to remove all the cartilage at this point. I cannot agree with Dr. Weir when he states that "if a commu-

nication be established between the two nostrils above the columnæ, in most cases it will soon close over and certainly give rise to no trouble." Such an occurrence should be avoided with the greatest care, for if it take place, it would be apt to leave a permanent opening between the fossæ, the edges of which would be constantly covered with scabs, and the source of soreness and discomfort. No doubt the changed physiological relations of the air-current through the nose is responsible for these phenomena which I have more than once observed after perforation of the septum.

An unfortunate, though rare case of excessive and repeated hemorrhage occasioned by this operation, and which occurred to Dr. A. H. Smith,* should make us careful, and always prepared for an anomalous arterial distribution. The knife of a galvano-cautery apparatus may be likewise utilized in cutting and burning away the redundant tissue of the nasal septum. This operation I have performed on one occasion with very happy results. At times the ulcerative condition of the septum which follows when its tissue is cut off with the knife, or scissors, may become a source of some annoyance, and require a considerable time for its complete cure.

Finally, I would refer to an operation, performed at the Presbyterian Hospital, where I was present, by Dr. Alfred C. Post, in the spring of this year.† It consisted, essentially, in separating the soft parts and cartilage of the ala on one side of the nose from the cheek by an external incision from the inner canthus to the anterior nares. The soft parts were dissected up, turned over, and the septum exposed. The prominent portion of the septum and the processus of the superior maxillary bone were then removed, a large communicating orifice being thus produced between the nasal fossæ, and the soft parts were restored to their normal relations and carefully stitched together with catgut sutures. The operation was a somewhat bloody one, will leave, doubtless, a more or less marked, indelible scar, and did not seem to me to have advantages commensurate with the slight disfigurement which must result, the certainty of an incurable, large hole in the dividing partition of the nose, and the necessary risks the patient incurs during and subsequent to such an operation.

When, for different reasons, no operation could be performed, I have employed with some advantages, temporary and permanent, tupelo tents of different sizes introduced into the nasal passages beyond the most occluded region. These tents should be

* Archives of Laryngology, vol. iv., No. 2, p. 132.

† Proceedings New York Pathological Society, New York Medical Journal, 1884.

allowed to remain in the nose during twenty-four hours. Upon frequent repetition of their insertion, in the course of a few weeks, a decided straightening of the nose may be

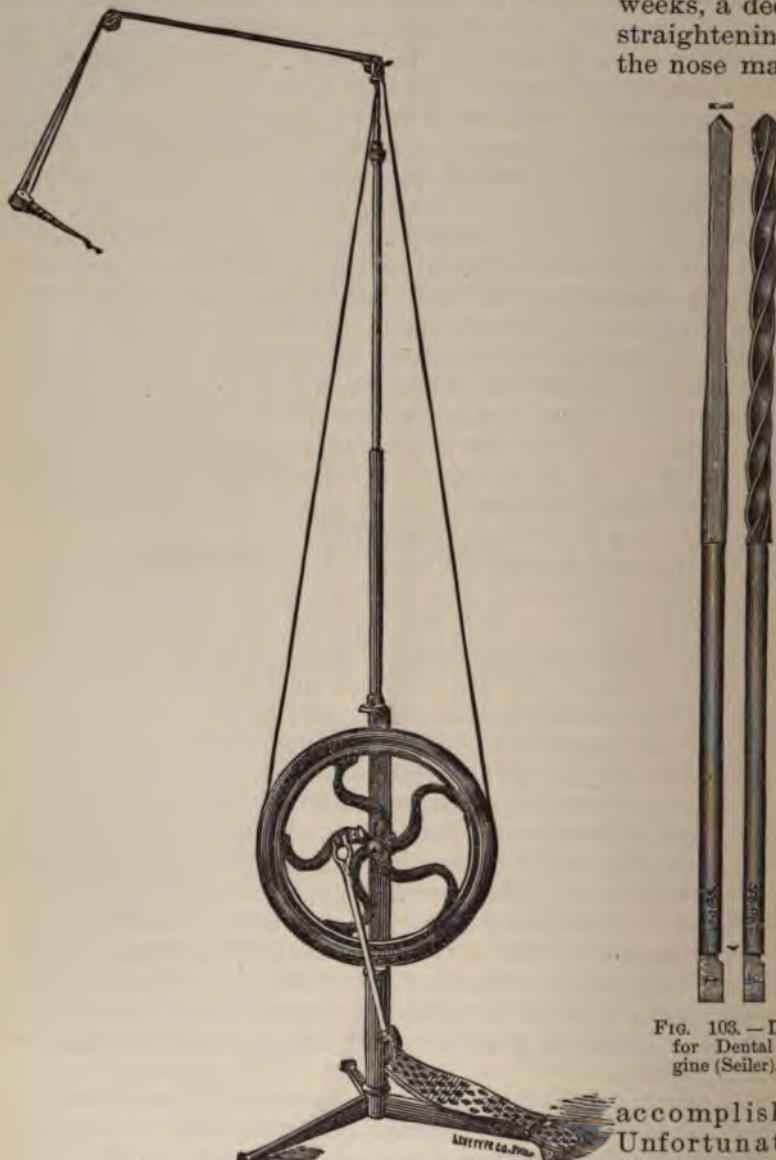


FIG. 102.—Bonville's Dental Engine (Seiler).

FIG. 103.—Drills
for Dental En-
gine (Seiler).

accomplished. Unfortunately the treatment is unpleasant and somewhat painful by reason of the pressure of the tent upon the prominent portion of the septum, where it is likely to cause a superficial ulceration. When treatment by means of the tents

is stopped, a short time only elapses before the nasal septum has returned in part to the position it had before medical treatment was begun.

II. BONY OBSTRUCTIONS OF THE NOSE.

Besides deflections of the cartilaginous portion of the septum, it is not infrequent to encounter bony obstructions of nasal passages in our examinations of patients affected with symptoms attributed by them to catarrhal condition. These bony obstructions are of different sizes and shapes and spring from different parts of the nasal passages. Sometimes they are true exostoses of the bony septum, or palatine process. Frequently they are caused by a somewhat unequal enlargement of the middle or lower turbinated bones themselves. The enlargement of the middle turbinated bones, particularly, have been shown by Dr. D. Bryson Delavan in a very excellent paper,* to be a tolerably frequent cause of partial nasal occlusion. Whenever he has encountered this form of hypertrophy in connection with a deflected septum, it has always occurred in the nasal fossa where the concave surface of the deviated portion existed. For this reason Dr. Delavan has insisted that this bone should always be removed before any operation for straightening the septum was resorted to. Their true etiology cannot always be determined, and occasionally they appear to date back to early childhood, although they never became an annoying condition until maturer years. Frequently a blow, or fall, even when the nose has not been fractured, was the probable existing cause of the bony hyperplasia. In these instances none of the methods ordinarily employed for the purpose of giving relief to cases of deflection of the cartilaginous septum will afford relief to obstructed nasal respiration. In order to accomplish a cure, recourse should be had to the use of the dental engine (Fig. 102), and drills (Fig. 103), and burrs (Fig. 104) of different forms. The engine is worked by the foot upon a treadle, and the drills, which are attached to the engine by a handle and flexible or jointed shaft, are employed to bore one or more holes in the bony projection. Once the projection is considerably weakened after this manner in its attachment, it is cut away by means of a suitable burr until the nasal passage has become sufficiently pervious.

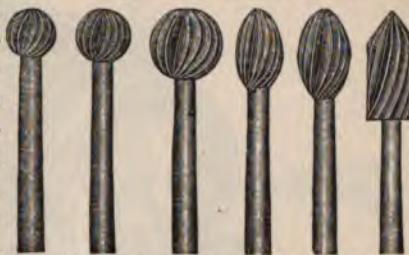


FIG. 104.—Burrs for Dental Engine (Seiler).

* Archives of Laryngology, July, 1882, p. 211-220.

It is usually well to employ an anæsthetic in this operation as it is more painful than a patient without considerable fortitude could bear and remain in a fixed position. Still, under circumstances when it is ill advised to administer an anæsthetic, the operation may be performed without it, for although the procedure is painful, it is not unendurable, as might naturally be inferred.* Immediately after the operation is terminated, the nose is quite free, but in a short time it becomes again obstructed by reason of the swelling of the soft parts. It will be essential at times to introduce for a few moments, after twenty-four or forty-eight hours, plugs of wood, or metal, into the nasal passage operated upon, in order to restore its permeability. After-

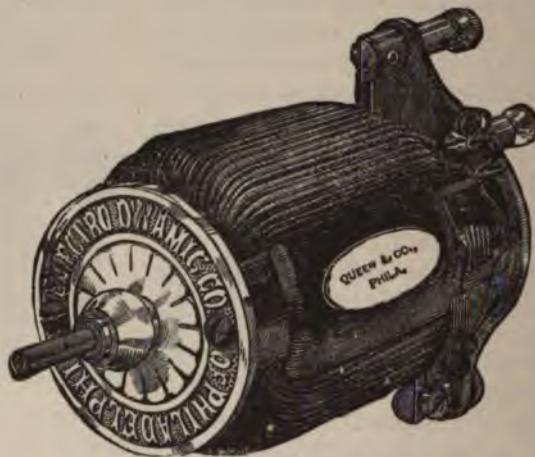


FIG. 105.—Electric Motor (Seiler).

ward, cosmoline may be sniffed into the passage several times daily, so as to keep it open. The hemorrhage from the operation is moderate and easily arrested by pressure with absorbent cotton, well packed in the chamber where the drill or burr has been used. In order to avoid the involuntary movements which are transmitted from the dental engine to the hand of the operator, and which are directly occasioned by working the treadle with the foot, Dr. Carl Seiler, of Philadelphia, has latterly employed with much satisfaction an electric motor (Fig. 105). “When used for operations, the motor is suspended from the

* Fortunately, within the very near future, which we can all fairly contemplate, the local use of the muriate of cocaine as an anæsthetic will be alone required when it is necessary to perform what have hitherto been painful operations. Already, Dr. Carl Seiler (*vide* The Medical and Surgical Reporter, Philadelphia, November 22, 1884) has employed a four per cent solution of this drug, with perfect satisfaction, in numerous operations upon the nose (nasal hypertrophies, bony growths, etc.).

ceiling by cords which run over pulleys and carry counter-weights, that balance it in any position in which it may be placed. This arrangement relieves the hand of all weight and thus a much more delicate manipulation of the tool is possible than can be obtained when the dental engine is used."*

Dr. Clinton Wagner † has operated for deflections of the septum, by means of the dental engine with cutting burrs and multiple revolving knives, in about twenty-five cases. In his earlier operations he employed a special kind of head-rest, and the arms of the patient were firmly attached to the sides of the chair by leather bands, or bracelets. These appliances he has now abandoned, as well as the use of an anæsthetic, the latter having given him much annoyance in his first case of this kind. The head of the patient is, at present, simply supported by an assistant. "He then applies the burr, or knife, without the protecting sheath, under, or on the side of, the prominence, and on a line with the orifice of the inferior meatus. Having it in position he presses firmly upon the obstruction, and directs his assistant to start the wheel." The instrument should be carried through to the pharynx, if the stenosis be extensive. Although no accident has ever occurred in Dr. Wagner's cases, he very properly considers the possibility of serious results ensuing, if the operator should fail to watch the burr and *not* be prepared to withdraw it instantly in the event of a sudden start, or movement by the patient. He writes that "the results from this operation are more gratifying than those from any that has been suggested."

In some instances in which the expense of purchasing either a dental engine, or an electric motor, is too considerable, a use-



FIG. 106.—Surgical Drill (Woakes).

* Seiler, Diseases of the Throat, pp. 250, 251.

† Diseases of the Nose, p. 101.

ful substitute may be found in the form of a surgical drill employed by Woakes (Fig. 106).

Occasionally, after the use of the burr, an ulcerated condition of the parts, at the site where the revolutions were made, has persisted for a long while, and resisted various healing applications. The advantages derived from this procedure of treatment are at times unquestionable. It should, however, only be employed when other methods fail to accomplish good results, since it requires a skilled hand to employ it successfully, and is not invariably followed by as much benefit as might at first be expected. The explanation of the latter fact lies in the statement, that we cannot always determine in advance the precise extent of the obstruction, and sometimes so much tissue is found to be involved after the operation has been commenced that it may become necessary to shorten it, although the patient is insufficiently relieved and a considerable amount of bony obstruction still remains in the nasal cavities.



FIG. 107.—Nasal Saw (Woakes).

In certain cases in which there is a prominent bony ridge projecting from the lower portion of the septum and where we fear an artificial perforation of this partition, it is preferable to use a small saw (Fig. 107) rather than the dental engine. The teeth of the saw should be set with their points inclined toward the handle. If this be done, the saw cuts on the pull and not on the push, and in using it all danger of making a wound of adjacent parts, in the event of the saw slipping, will be avoided.

The use of the saw necessitates, according to Seiler, plugging the posterior nares and inhalation of an anæsthetic, as it is both bloody and painful.

This statement is not in accordance with that of Woakes, who affirms that the saw causes as little hemorrhage as the galvano-cautery, and has steadily grown in favor with him since he first employed it some five years ago, as a satisfactory instrument in nasal operations.

In addition to the saw, Dr. Weir's gouge-forceps (Fig. 101) may serve to cut away any bony projections from the septum, or even a turbinated bone itself.

During the past two years or more Dr. William C. Jarvis * has successfully employed a fenestrated cartilage forceps, for the removal of small pieces of deviated cartilaginous or hypertrophied tissue from the septum. The cutting blades of this



FIG. 108.—Jarvis' Fenestrated Cartilage Forceps.

instrument "may be compared in shape and action to an ordinary ticket punch," and are readily closed by "slight pressure of the thumb exerted against the handle" (Fig. 108).

* New York Medical Record, February 7, 1885.

CHAPTER XII.

ULCEROUS CORYZA.

IN beginning the study of this disease, I wish first to define the views I hold in regard to several much debated questions of rhinology.

1. What is *ozæna* ?
2. What should we understand by ulcerous coryza ?
3. What are the relations between ulcerous coryza and *ozæna* ?
4. May we encounter ulcerous coryza without marked fetidness of the breath ?

Upon the proper interpretation of, or answers to, these queries depends, in a great measure, the correct views of a subject, which has been variously determined by different writers. In regard to it, in fact, there exists in the profession, both among general practitioners and specialists, considerable ambiguity.

1. In my belief, as in that of other writers, this uncertainty of opinion has arisen mainly from the fact that *ozæna*, which merely signifies the symptom *fetid breath*, has been widely used to characterize a morbid entity. It shall, therefore, be the primary object of this chapter to show how the term *ozæna* should hereafter be employed.

In a few instances of acute rhinitis, and in many cases of chronic rhinitis, the symptom *bad breath* occurs. The breath in these diseases is very rarely, however, of such extreme fetidness as to have an odor *sui generis*, and to render it very difficult for the practitioner to endure it, while examining the patient. In the very large majority of instances in which this symptom is present to the degree mentioned, there is present one or more ulcerations of the nasal fossæ.

In a few examples, relatively, where no ulcerations can be discovered, the symptom *ozæna* is unquestionably allied with an advanced atrophic condition of the pituitary and naso-pharyngeal mucous membranes. It is possible that a constitutional dyscrasia, of the nature of *herpetism*, or *rheumism*, may be an underlying cause of the atrophic nasal catarrh. Never, however, in my experience has this constitutional state given rise to *ozæna* until, by means of the rhinoscope, we are able to discover

local *dryness* and *thinning* of tissue. This view is important to hold, because no matter how faithful our efforts shall be, internal remedies given alone, and to the exclusion of topical treatment, will not result either in a cure or very marked amelioration. It would be well, therefore, for every practitioner who reads books of general medicine, and who is unfamiliar with modern methods of nasal examination and treatment, to bear in mind, that the recorded views of Rousseau and his followers, with respect to an *idiopathic ozæna*, are most probably incorrect.

The allusions, indeed, which are frequently made, in studying this subject, to *idiopathic fetidness* of the *sweat* of the feet or *axilla* of certain individuals, are likewise, I venture to affirm, misleading! I take it that, for the most advanced dermatologist of the day, *fetid sweat* means undoubtedly morbid change of one or more of the elementary structures of the skin. Whether or not this latter statement be strictly true, my affirmation in regard to the lining membrane of the nose is, to my mind, unquestionable.

2. By ulcerous coryza I mean an inflammatory condition of the pituitary membrane occasioned by, or accompanied with, one or more ulcerations of this part. The ulceration itself may be more or less extensive, be superficial or penetrate deeply, and, in this latter case, destroy either the bony or cartilaginous structures of the nose to a restricted or large extent. The ulceration, or ulcerations, since there may be one or several, are usually due to: a, *Scrofula*; b, *syphilis*; c, certain *pyrexias* (*measles*, *typhoid fever*, etc.); d, *nasal calculi* or *foreign bodies*; e, *toxic substances*; f, *catarrh*. The latter form is doubtful. I exclude *carcinoma* of the nasal fossæ.

3. Frequently, ulcerous coryza is accompanied by *ozæna*, or *fetid breath*. This is especially true whenever the ulcerations have penetrated deeply and attacked the bone and cartilage. Even under these circumstances, however, we may meet with cases in which the breath is not extremely fetid, or at all events, does not take on the true loathsomeness of *ozæna*.

4. I have treated several similar cases as private patients, and have had no unusual difficulty in rendering them able to associate with their fellows, without occasioning disgust by reason of their *fetid breath*.

a. *Scrofulous ulceration*.—I do not remember to have seen an ulceration of this origin at its beginning. In individuals where such an ulceration has become formed, it is usual for the nasal mucous membrane to have been swollen and infiltrated during a long period before the destruction of tissue is visible. Even if an examination of the nasal fossæ were made, therefore, at its

initial stage, it is probable that no ulceration would be discovered, since the view of the interior of the nasal fossæ, even with a suitable nasal speculum and strong light, would be at best very limited. When such cases are seen by the specialist for the first time, the rule is, that the ulceration has already devoured beyond the soft tissues. The ulceration itself is said to be characterized by an irregular gray fundus. The surrounding soft tissue is moderately congested. The margin of the ulceration is irregular. These ulcerations probably begin in what are known as catarrhal ulcerations, and by degrees penetrate the affected tissues. They occasion almost constant purulent discharge from the nasal passages anteriorly. Frequently, they are covered with soft, light yellow crusts, which are readily expelled by a moderate effort of blowing the nose. The fetor of the breath which accompanies them is variable in amount. There are other evidences of marked strumous constitution in the individual, viz. : sore eyes ; eczema of scalp ; affections of the joints ; lupoid or other cutaneous disease. Ulcerations in the nasal fossæ, due to scrofula, are very rarely met with in New York. Abroad, and particularly in Germany and France, they are more frequently described. There they often occasion extensive and irremediable loss of tissue. The bony and cartilaginous structures of the nose are destroyed by their action, and at the same time the soft external tissues show the disfiguring evidence of their continuous influence. Deformity of the nose, as flattening of the lower extremity, or a sunken condition of the bridge, may occur whenever the nasal bones and the cartilaginous support is largely eaten away.

b. *Syphilitic ulceration*.—This ulceration is far more interesting for us to study than the preceding, owing to its relative frequency. Rarely have I been able to recognize an ulcerative condition of the pituitary membrane in the secondary stages of syphilis. Occasionally, it is true, there may be seen a certain number of superficial erosions of tissue in the vicinity of the alæ of the nose that we might term *syphilitic*, were it not that, at the same time, there is present a certain degree of nasal catarrh with formation of crusts of inspissated mucus. The catarrh frequently precedes the syphilis, and although it may be aggravated by it, the erosions which follow have seemed to me doubtful as to their exact nature. What I have just written applies to children and adults. In neither have I ever been able to determine exactly the presence of a "mucous patch" on the nasal membrane that I could thus designate. In the tertiary period of the acquired disease, or in hereditary forms which have shown themselves from four to ten years after birth, several times I have seen, watched closely, and treated for months and years cases of

severe ulcerative disease evidently under the dependence of a syphilitic taint. Syphilitic ulcerations in this advanced form do not remain superficial. They generally penetrate deeply and are not arrested in their destructive march before much of the solid structure of the nose has disappeared. As the specialist does not ordinarily see such cases in the beginning, it is not often possible to decide as to the exact manner of invasion of the ulceration, nor in regard to the causative pathological condition.

Unquestionably, certain nasal ulcerations first appear upon the membrane covering the septum, or one of the lower turbinate bones. In a relatively short time the cartilaginous septum is perforated, or portions of denuded diseased bone are detected over one of the lower turbinates. The ulcerations do not stop in their destructive action short of devouring much of the nasal skeleton. The ulcer itself is not so pale or irregular as that of a strumous nature; on the contrary, it is rosy and with well-defined, clean-cut margin. The crusts which cover it are relatively thin, adherent, and of a brown color. When touched with the probe they are very sensitive and bleed easily. The discharge of pus from the nose is moderate in amount, and if not thoroughly disinfected, is usually extremely fetid. From time to time, bits of dead bone are blown or extracted from the nares. The bony and cartilaginous septum, the middle and inferior turbinate bones, the vomer and ethmoid, are the bones most frequently attacked by the disease and ultimately destroyed. Occasionally, the nasal bones and upper extremity of the superior maxillary have become affected.

It would seem that syphilis of the nose often shows itself by a primary caries or necrosis. Pus is afterward formed; the pituitary membrane, raised and distended in certain points, shortly gives way; a fistulous opening is made, and, finally, a large ulceration is formed. Scarcely ever does the ulceration extend so far as the limit of dead bone, and by the introduction of probe and forceps we are often able to bring away fragments of carious or necrosed bone which lay far back in the nasal passages.

The osteitis, which under syphilitic infection often exists, is liable to a sudden inflammatory process. The bridge of the nose, or the inner angle of the eye, become red, painful, and swollen, and we might conclude that erysipelas had begun. Fortunately, by appropriate treatment, this somewhat threatening condition will soon disappear.

The fetid breath accompanying this state of caries and necrosis is usually most nauseating. By judicious treatment it can in most cases be so much ameliorated, that even such a patient is

able to go among friends without too great mental trepidation. The deformities of the nose resulting from syphilitic caries, or necrosis in the nasal passages, are frequently characteristic.

I have seen several examples, however, in which, despite considerable destruction of bone, the nose in its outward aspect was about natural. The bony and cartilaginous structures are not the only ones attacked. At times the hard palate is perforated through, or what is even more deplorable, extensive ulceration of the pillars of the fauces and soft palate occurs. As a result of this ulceration, we have more or less destruction of the soft tissues, and an unhappy consequence is found occasionally in adhesions formed between the soft palate and the pharynx. As these adhesions are of cicatricial nature, they contract during many years, and make the orifice between the mouth and the upper pharynx and nasal passages very narrow. Sometimes communication is almost entirely cut off by a membranous wall and the opening of communication will only allow the smallest probe to pass through. Consequently, nasal respiration is noisy and difficult. Besides, the patient is unable to blow his nose with normal force, and thus clear his nasal passages of accumulated mucus or pus. The breathing, especially at night, is distressing, and owing to buccal respiration the teeth and lips are separated, and pharyngitis sicca becomes developed. Too frequently the sense of smell is greatly obtunded, or has completely disappeared. The ears have been the seat of a long-continued purulent discharge, and after loss of the membranæ tympani and ossicles, the power of hearing is almost lost. The eyes often suffer from obstruction to the nasal ducts and well-marked palpebral conjunctivitis and epiphora are habitual. Asthenopia is frequent.

c. One of the characteristic lesions of *glanders* is an ulcerated condition of the nasal passages. This, I have never encountered. I have seen more than one case, however, of deep ulceration situated in the nasal passages and having first shown itself during the course, or convalescence, of measles, scarlatina, and typhoid fever. These ulcerations are usually situated upon the cartilaginous septum, although others may be found upon the turbinated bones. The ulceration of the septum is frequently isolated. It begins as a small superficial lenticular erosion, and is first occasioned by the local irritation produced by a crust of inspissated mucus which has been deposited at this point and is only removed, as a rule, by forcible blowing, or extraction. In some cases where no great local discomfort has been caused, or the patient's general condition has been such that the presence of the hardened, irritating mucus has remained unnoticed, it is finally separated from the

underlying mucous membrane by a secretion of muco-pus, which by degrees loosens its attachments, and it is then expelled from the nares by a moderate effort of blowing the nose. No doubt the general condition of the patient has considerable importance as regards the formation of dry mucous crusts upon the septum, and whenever a lowered, or markedly adynamic condition prevails during the duration of the pyrexia, the ulceration of the septum is more likely to form during convalescence. Once even a superficial erosion has formed upon the septum, it is apt to enlarge and deepen, until, finally, a perforation of the cartilaginous septum is effected, and there is true necrosis of cartilage. Sometimes the rapidity, as well as the certainty, of this bad result being produced, is directly promoted by the patient himself, who, whenever he feels the irritating effect of the adherent dry mucus, is prone to pick it off with the finger-nail. This, of course, occasions additional and repeated irritation, and frequently causes some of those cases of *severe epistaxis* in these diseases, which, in children at least, are dreaded by the general practitioner.

The ulceration of the septum may extend, more or less, and involve nearly the entire cartilaginous septum. It is usually of round, or oval form. The margin of the ulceration covers itself with hard scabs continuously, and often becomes the source of quite severe neuralgic pains. The fact of the septum being particularly the seat of these ulcerations is explained by the direction of the impinging column of inspired air which strikes at this point with more force than elsewhere in the nasal fossæ. Laden with more or less irritative substances, such as particles of dust and other suspended impurities, it occasions local hyperæmia, or inflammation. This local condition favors increased secretion and the inspissation of what secretion is given forth, since this latter is never very considerable over the septum itself, on account of the dearth of glandular tissue. Once the ulceration has penetrated deep enough to denude the cartilage, the further progress of the destruction of tissue is clearly and readily explained by the absence of vascular supply and poor nutrition of this part, which soon becomes necrosed in a considerable extent. Ulcerations do, as I have said, appear upon the inner aspect and anterior extremities of the two inferior turbinate bones, but they remain, as a rule, small in extent and superficial. Rarely do they penetrate deeply and produce caries or necrosis of these osseous structures.

d. *Nasal calculi* (rhinoliths), and what are more common, foreign bodies, introduced into the nose, may by their protracted presence occasion ulcerous coryza. The symptoms of the disease, under these circumstances, will not differ materially from

those assignable to this affection when of very different origin.

e. It is a well-known fact that the workers in *bichromate of potash, arsenic, and mercury*, are apt to be sufferers from *ulcerous coryza*. This disease is occasioned by the local irritative effects, particularly upon the septum nasi, of the vapors or solid particles from these substances. According to Delpech and Hillairet, those who work in bichromate of potash, and who, prior to their doing this work, had been habitual snuff-takers, were usually unaffected in their nasal passages by the chromate fumes.

This is a curious fact. I will mention, at this time, that in a private patient, under my care, who worked in a tobacco store, and who was exposed to inhale frequently "tobacco dust," I became satisfied, after a time, that the ulcerous coryza with which he was affected did not get better, but actually grew worse, owing, as I believed, to the condition of atmosphere he was constantly breathing. In the forms of ulcerous coryza due to trades, or to inhalation of toxic substances, *ozæna*, except in a very mild form, is rarely an accompaniment of this disease. This proves distinctly that the mere ulceration is not sufficient to explain very fetid breath, and even though it attack and implicate deeply the hard structures. Rarely, the sense of odor is completely abolished, although frequently obtunded. The outward conformation of the nose usually remains unchanged. This is due to the fact that the nasal bones and upper portion of the bony and cartilaginous septum are left intact by the perforating ulceration. There is, of course, often a considerable degree of whistling nasal inspiration and nasal intonation in speech, as we should expect with a like lesion.

f. *Simple, or catarrhal ulcer*.—I have considered this form of ulcer as doubtful for different reasons. The older writers, and particularly Boyer and Troussseau, have described a form of ulcer—usually superficial and never attacking the solid structures of the nose, as being occasioned by the herpetic, or dartrous diathesis. To my mind, there is no question that this diathetic condition exists. I, also, believe that there is a certain well-defined connection, in a few cases, between this constitutional dyscrasia, which manifests itself by different cutaneous eruptions (psoriasis, eczema, etc.), and the presence in the nasal passages of chronic atrophic catarrh. It is alone in this form of *catarrh* that I have been able to discover ulcerations of sufficient depth and extent to be worthy of the name, and these I have recognized when, after careful examination and close questioning, the patient presented no signs whatever of present or past struma or syphilis.

In the *hypertrophic form of catarrh*, simple in nature, I have never seen beyond the merest erosion of mucous membrane, possibly due to contact of opposing surfaces, possibly due to a more than usual acrid nasal secretion, any loss of tissue which could properly be termed ulcerative.

In *atrophic catarrh*, while in many instances, even after very careful examination, no ulcerations can be detected, yet in a few rare examples, such ulcerations can be discovered. There may be one or more ; they may be very sensitive to the touch of the probe and bleed easily. By a little careful and repeated local treatment, they can always be cured and never extend so deep into the pituitary membrane as to denude either bone or cartilage, far less produce caries, or necrosis of these structures. The ulcerations in atrophic catarrh, when they are present, seem to be mainly under the dependence of the dry scabs which form so continuously in this disease, and which finish at times by occasioning this loss of tissue. Finally, I would add that, thus far, I do not remember to have seen a well-defined ulceration, in the anterior or posterior nasal passages, which I could call *tubercular*. I have seen tubercular ulcerative disease of the fauces and post-pharyngeal wall and extending somewhat above the free margin of the soft palate, but there, apparently, the ulcerative process stopped. Several times, however, I have known, in cases of advanced pulmonary phthisis, large, inspissated, foul-smelling crusts to be periodically blown, or taken away with pain and great effort, from the nasal passages, and in such instances have strongly suspected the existence of ulcerous coryza. Hitherto, I have not been able to justify my suspicions by direct investigation in the post-mortem room.

Symptoms.—These differ considerably according to the more or less advanced stage of the ulcerations which are present. They, also, vary in a measure with the underlying constitutional condition of the individual thus affected. If the ulceration be still small in size, and have not penetrated deeply, the rule is that the patient has few symptoms, and these may not have claimed much attention from him. A constant and uncomfortable feeling in the nose, and a strong disposition to the formation of inspissated mucus, or crusts in the anterior or posterior nasal passages, are for quite a time the most usual symptoms. To these are added a marked nasal intonation, and soon, on account of the constant irritation occasioned by the dry mucus, or the too frequent use of the finger and handkerchief, there is quite an abundant discharge of mucus, which may be occasionally streaked with blood, but is only rarely accompanied by any perceptible bad odor. Localized slight pain or heaviness in the nasal fossæ is not infrequent.

Whenever the ulceration has penetrated more deeply into the tissues, and invaded both cartilage and bones, we shall have more marked symptoms of disease. The odor of the breath which is expired through the nasal passages may, and frequently does, become fetid. This fetidness may even be characteristic, as is that of true ozæna, and be so extremely offensive as to render the subject of it almost insupportable. Such cases are, however, in my experience, very rare, and I have seen several times patients in whom the bony septum and turbinated bones were already carious, or necrosed to a large extent, and yet the patient had no *extreme* fetor of the breath. Of course carious or necrosed bone, the direct consequence of deep, progressive ulceration of soft tissues, has a certain odor of its own, which is bad, but between this smell and that of true *ozæna* there is a wide difference. The one can be endured ; the other is at times quite unsupportable. Whatever, then, may be the origin of the true odor of ozæna, it certainly is not due to diseased bone. It needs something more to develop it in its most characteristic manner. To anyone who has come into contact with a case of *typical ozæna*, the odor is such that it cannot be forgotten. To anyone who has not encountered such a patient any description must fall short of the reality, or rather of giving an accurate idea of what it is like. In its most offensive form it has been compared with the odor of the crushed bedbug ; in a milder, less objectionable degree, it has been likened to the odor of a stagnant marsh.

Many theories have been current, at different times, and among different authorities, as to its precise cause. Ziem has attributed it to a special ferment. Fournié, throws legitimate doubt on this suggestion, while ready to give value to any discovery in this direction. The nasal mucus from cases of true ozæna has been examined by him under the microscope, so as to find, if possible, the bacterium *foetidum* of this condition. He has never found other than the ordinary micrococcus, which obviously had no special importance. Zaufal is inclined to the belief that a particular conformation of the nasal passages, in which the secretions are locked up in their interior by a disproportion between the capacity of the nasal passages and the force of the current of expired air, and which is accompanied by more or less intense inflammation of the pituitary membrane, is the essential factor. To this view there are several objections : First, cases of pronounced ozæna have been observed where the conformation of the nasal passages was absolutely normal. Again, there are individuals affected with chronic hypertrophic catarrh, abundant mucous, or muco-purulent discharges, and having a nasal organ of the true ozænic

type, *i.e.*, bridge of the nose sunken and nares hypertrophied and dilated, who have no perceptible fetid odor of the breath expired through the nose. Finally, if the fetor of nasal expiration were due to the changes produced in the mucous discharges, which had been long pent-up within the nose, frequent washings should eradicate the odor for a time. This is scarcely true, however, since the bad smell returns very soon after a thorough cleansing. Doubtless, a relatively large capacity of the nasal passages favors the formation of dry mucous crusts—but it is not admissible that the prolonged sojourn of these latter in the nose is the cause of the nauseous odor, otherwise it would take a certain time to return. It is probable that the constitutional condition which occasions the wide nasal passages, is also efficient in producing ozæna. This constitutional condition is peculiar to the individual.

In the case of ozænic patients, the glands of the pituitary secrete this special fetid odor, just as elsewhere in the economy, are found purulent secretions, bony lesions, etc. In any event, all inflammatory conditions, all specific causes, as tuberculosis, syphilis, scrofula—are eliminated, since ozæna often exists independently of all these states, and is not essentially connected with them. The preceding explanation, which is essentially that of E. Fournié, appears to me the correct view, as far as can be at present, of the first cause of the odor of ozæna. The idea of Krause, of Berlin, that the foetor of ozæna is essentially due to an excessive formation of fatty detritus and globules in the pituitary membrane is evidently untenable, since E. Fränkel has found in one reported case, where a post-mortem was made, and in two other unpublished cases of true ozæna, "this condition was absent, and yet the foetor was present."* Dr. Gottstein's microscopic investigations sustain those of E. Fränkel, while Löwenberg states what is possible, *viz.*: that Krause's fatty granules are micrococci.

In favor of this view it can be affirmed that the two are sometimes confounded together, and are often difficult to distinguish one from the other. By analogy with the pus of otorrhœa, in which fatty granules and crystals of margaric acid are very numerous, and where fetor is frequently absent, we may conclude that these bodies, even when present, do not occasion this symptom. In addition to this statement I would further remark, that many physicians of our time, better informed than those of three decades previously, recognize indeed a real idiopathic ozæna; not the idiopathic ozæna of Troussseau, where nothing seemed to characterize it, nor indeed the one of Gott-

* *Transactions of the International Medical Congress, London, 1881, vol. iii., p. 313.*

stein, in which the atrophic form of nasal catarrh invariably precedes it, and is in its development but a stage of its production, but rather that of Zuckerkandl, in which the congenital deformity of the nasal framework, which is hereditary, is also the necessary accompaniment of ozæna. The former morbid condition can usually be recognized. In ulcerous coryza in the beginning, and during the course of the disease, the patient complains of the bad odor he smells himself, and which is due either to the ulcerous coryza or to the ozæna which accompanies or complicates this disease. Later on, the olfactive sense is blunted, and occasionally completely lost.

The complete or incomplete anosmia is no doubt occasioned by the concomitant inflammation and swelling of the pituitary membrane in the upper portion of the nasal fossæ. It is not often due to the presence of the ulceration, since rarely does this penetrate so high as to destroy important filaments of the special sensory nerve. In a few infrequent cases, in which the middle or lower turbinated bones were in close juxtaposition with the nasal septum, by reason of great infiltration of the soft tissues, the *odors* could not be drawn up to the olfactive nerve, and consequently could not be appreciated. Besides the more or less fetidness, the patient suffers from an abundant discharge from the nasal passages. This discharge is of muco-purulent character. It is sometimes quite fluid and more frequently of semi-solid consistence. It may be streaked with blood. From time to time, or once or twice every day, or every other day, bits of hard, inspissated, yellow, or brown crusts are blown from the anterior nasal passages with considerable force. Sometimes this hardened mucus will remain pent-up during several days, and is only blown down after repeated and severe efforts. Crusts somewhat similar in character, although they are usually thinner and more adherent, are formed in the post-nasal space, and are hawked into the mouth, every few days, after many vain attempts to detach them. Wherever the bones are covered with ulcerations there such crusts are specially prone to form, and no sooner are one or more detached, than others commence to form and conceal from view the primarily ulcerated site. Whenever the mucous crusts have just become detached the mucous membrane is red, thickened, and of a chagrined or mammillated appearance. If the probe is introduced and gently pressed against it, it is often rather baggy and bleeds easily. The stoppage in the nasal passages, before the destruction of the hard parts has become extensive, is quite marked at times. Alternately, and at short intervals, the nasal passages become quite permeable.

The discharges from the nose are apt to irritate the nares

and external aspect of the upper lip ; hence, irregular, painful, superficial erosions are formed, some of which are covered with crusts. Under constant irritation the alæ are thickened and the nares become much contracted as regards their openings, resembling a condition of phimosis. The nasal intonation of the voice is a frequent symptom. This is not often pronounced, however, in a permanent manner, where the soft palate has not been implicated, or where no perforation of the hard palate exists. When either of these accidents has declared itself, the voice remains permanently nasal. Often the patient complains, where the destruction of the bones of the nasal passages is extensive, of dull pains, now and then taking on a lancinating or neuralgic character. These pains are occasioned by involvement of the ethmoidal twig of the nasal branch of the ophthalmic nerve, and indirectly bring on conjunctivitis and keratitis. These ocular inflammations are also influenced by the obstruction of the nasal canal, which is due to the infiltrated mucous membrane, and to swelling of inflamed bone about it. Cases are recorded, also, in which osteitis has affected the orbital plate. The continued discharge of purulent or decomposed material from the nasal passages is prone ultimately to affect the general health. The appetite is diminished, vomiting and diarrhoea occasionally occur, and loss of strength follows. These symptoms sometimes last until a large sequestrum is eliminated. This, although it causes some local inflammatory reaction, is usually accomplished quietly. A few rare examples are on record where phlebitis and meningitis were thus occasioned.

Weber and Troussseau have cited such cases. After death purulent abscesses were also found in the liver and lung. In consequence of the discharge of the bones from the nose, the bridge may fall in, and a distressing deformity become established. Under these circumstances the nasal intonation is permanent, unless the nose be straightened by an ulterior operation. In those instances in which by reason of nearly complete adhesions formed between the posterior margin of the soft palate and the lateral and posterior pharyngeal walls, the nasal and buccal pharynx are separated from one another by an almost complete membranous curtain, the patient suffers from many painful symptoms. Not only he cannot breathe through the nasal passages, which causes continuous mouth-breathing, with the necessary result of dry, irritative pharyngitis, but, also, all nasal secretions accumulate in the nose, become much altered in composition, and can only be partially blown from it by the most intense and persistent efforts. Into "the fetid pool" thus formed behind the hard palate, especially when the patient is in a re-

cumbent posture, the Eustachian orifices are constantly immersed. Sooner or later, inflammation and purulent discharge from the ears, with complete loss of hearing, is sure to follow. The olfactory sense is also nearly lost in consequence of the fact that the odoriferous particles never reach the terminal filaments of the olfactory nerve. Inasmuch as the sense of taste largely depends upon that of smell, it is likewise much impaired. The voice is peculiar. It has little or no resonance—and this is readily understood, when we reflect that there is a complete shutting off of the reverberating chambers of the nasal passages, and of the naso-pharyngeal space.

Schech is of the opinion that *superficial*, as well as *deep*, ulcerations suffice to occasion the adhesions of the soft palate to which I have referred. He does not consider it essential that ulceration both of the pharynx and the soft palate should occur at the same time to produce this result, although he admits that the twofold lesion is very frequent. According to this author, it appears that preceding perforation of the soft palate by a gummy tumor greatly and directly promotes this unfortunate result. It is explained by the facts: 1, that the soft palate loses a considerable amount of its natural tension, and hence, the base of the uvula, with the free margin of the palate, lies in more prolonged contact with the post-pharyngeal wall; 2, that during the acts of coughing, sneezing, and hawking, as well as breathing, the current of air is changed so as to pass in great part through the perforated orifice, and does not, therefore, tend to separate repeatedly the slightly united surfaces where the ulcerative condition exists.

In aggravated cases, Mackenzie states most truly, "the isthmus of the fauces loses its normal arch, and the velum, or whatever may remain of it, is drawn backward by white cicatrical tissue radiating from the hard palate to the posterior wall of the pharynx."

In such examples it is not unusual to find the lower pharynx also greatly contracted, so that pronounced dysphagia results. The orifice of the larynx may, in like manner, become contracted, and then more or less intense dyspnea is superadded, and the state of the patient is really most deplorable.

Diagnosis.—It is important to recognize the existence of the ulceration; its situation and extent; its cause. In order to do this thoroughly, the nasal speculum, the rhinoscopic mirror, and a suitable probe are all useful, when aided by a strong reflected light from a head-mirror. At times an accurate diagnosis is difficult, or impossible for awhile, by reason of the narrowed nares and the abundant deposit of crusts within the nasal passages. By cleansing with the douche, or with the brush, car-

rier wrapped with cotton, or small dressing-forceps, the latter can be removed. The small anterior orifices of the nose are frequently dependent upon a chronic inflammatory thickening of soft tissues, which is the result of previous eczematous eruptions. This will be diminished by repeated applications of calomel, or iodoform ointment. When the nares are sufficiently patent, and the nasal passages cleansed of inspissated mucus, the existence of the ulcer can usually be affirmed by anterior or posterior rhinoscopy. In the great majority of cases, it is situated either at the antero-inferior portion of the septum, or upon the upper surface of one of the turbinated bones. In those cases in which, after repeated, careful explorations, the ulcer cannot be discovered, there is doubt whether it is really present. There are, however, unquestionably, a few exceptional cases where the ulcer is so concealed for awhile by the swollen and infiltrated pituitary membrane, or by the fact of its unusual site in some concealed point under one of the turbinated bones, or in the superior portion of the nasal passages, that it may escape detection, although, in view of all the symptoms present, its existence should be admitted. The future development of the case will probably justify the assumption, since the ulcer will extend its ravages until it is brought into view, or within reach of a probe. The ulcer, when seen, may be superficial or deep. Already it may have perforated the mucous membrane and laid bare the cartilaginous or bony framework beneath, or it may have only penetrated beyond its superficial layer. Its extent is, of course, variable. Usually it is somewhat rounded, or oval. Its appearance is different according to its cause. If it be of strumous nature, it has an irregular margin, a rosy or grayish bottom, and secretes a moderate amount of semi-fluid purulent material. If it be a syphilitic ulcer, its margin is sharply cut, less irregular, and its fundus is covered by a thin, brownish adhesive crust. Around the margin the pituitary membrane has an angry, inflamed aspect.

Toxic or professional ulcers in the nasal passages, as well as those due to a traumatism, or brought on by a pyrexia, have no distinctive characters in themselves. In fact, even the nature of a scrofulous or syphilitic ulcer in the nose cannot surely be determined by its aspect alone in many instances. Commemorative, as well as present signs, must be referred to. First of all, it should be asked, Is there any history of *primary* lesion in the individual? Were there signs of hereditary syphilis at the time of birth? The appearance of the individual will aid us often in making a diagnosis. If the individual have thick lips, a pale, swollen-looking skin of the face, marks of old suppurative adenitis upon the neck, with eczematous eruption behind the ears,

and chronic catarrhal conjunctivitis, we shall be disposed to think of scrofula. This opinion is further strengthened if he is a sufferer from some chronic lesion of the bones, or joints, connected with suppurating fistulæ. If, on the contrary, the hair be thin, copper-colored or other cicatrices are evident at different regions of the body, the upper incisors have the peculiar ridges indicated by Hutchinson, the corneæ show evidences of interstitial keratitis, there be bony exostoses over different bones, we are apt rightly to think that syphilis is the cause of the ulcerous coryza. Sometimes, after the most exacting inquiry and the most careful local inspection and investigation, we remain necessarily in doubt for a long period as to which blood dyscrasia is the underlying factor of the nasal disease. The march of the disease, if it be syphilitic, is usually more rapid and more destructive, than if it be scrofulous. Besides, the worst forms of lupoid ulceration are relatively rarer with us than they are



FIG. 109.—Syphilitic Ulcerations of the Naso-pharyngeal Space (Semeleder).

in Europe, and, therefore, when the affection is decidedly necrotic in character, we should be disposed to admit the presence of hereditary or acquired syphilis in all doubtful cases. Treatment, too, is of occasional value in determining our diagnosis, and whenever the iodides, in moderate or large doses, have proved manifestly beneficial in their action, we should take this to be a proof of the syphilitic nature of the disease. In cases where the contrary is true, of course, we may be obliged to remain in great and legitimate uncertainty. In order to determine the existence, the probable size and depth of an ulcer, the number and locations of these, if there be more than one, whether the bony framework be denuded and to what extent, we are obliged to recur to the use of a probe. Often we may bend this probe at its distal extremity to a right angle in order to discover if there be a sequestrum, present, and if so, whether it can be readily

moved and may be extracted by means of the forceps. Semeleder has pictured syphilitic ulcerations which have their seat in the posterior nares, near the Eustachian orifices, upon the upper surface of the soft palate, behind the bony septum (Fig. 109). These, in my experience, are very infrequently encountered, even when considerable portions of the anterior bony septum and turbinated bones have already been completely destroyed by caries or necrosis.

In the event of the existence of professional ulcers, occasioned by the absorption of the fumes of the chromates, or by arsenic poisoning, the patient will ordinarily tell the physician what he has been exposed to, and, besides, the diagnosis is strengthened by the presence of numerous ulcerations of a similar nature in other parts of the body, *i.e.*, hands, elbows, scrotum. The eyes are often affected by a localized injection around the orbit.

If neither syphilis nor scrofula be discovered, if no professional antecedents will explain the existence of ulcerous coryza, if no traumatism has taken place, we must inspect the nasal passages very closely for a foreign body, or tumor, which by pressure may have occasioned it. An eburnean osseous formation (Legouest) or a deflected septum bone occasionally has been the cause of an ulcerous coryza. It is possible sometimes, on account of the great resemblance of some adherent crusts, in certain positions of the nasal passages, to real ulcerations, to confound for a time the former condition with the latter. The use of the probe or cotton-carrier will immediately clear up an error of this kind.

Prognosis.—Ulcerous coryza rarely directly imperils life. In a few rare instances the complications which have arisen in the vessels, or coverings of the brain, have been the immediate cause of death. Although ulcerous coryza may not often occasion death, it is yet to be regarded as a grave disease. This gravity is, however, in proportion to the advance of the ravages of the disease before treatment is begun, and, as a rule, in relation with the nature of the dyscrasia underlying it. Of course, if the ulceration be superficial, and has not yet caused denudation of bone, we may hope by suitable local applications, combined with general medication, to effect a cure in a more or less brief period. If the bony or cartilaginous framework be already attacked, the outlook is far graver. The bony structures, once denuded, can get well in but one or two ways, either by insensible exfoliation of bone, which occurs in carious disease, or by the detachment and elimination of the sequestrum, which takes place when there is necrosis. Frequently this process lasts a very long while, as the sequestrum may be covered over and

concealed by a thickened and inflamed mucous membrane, or be situated in some anfractuous part of the nasal passages, from which it can only be separated with considerable difficulty. Often, after one or more pieces of necrosed bone are blown from the nose, this organ will seem to improve for a time, but very soon, under the influence of some accidental cause, or, indeed, of exposure to cold, the tissues of the nose set up a fresh inflammatory process, more bone is attacked, and new necrosed bone is soon formed. Besides the chronic fetid discharge accompanying this condition of necrosed bone in the nasal passages, which makes the sufferer from it an object of repugnance to those who come very close to him, the disease is ultimately, unless arrested almost certain to cause a considerable degree of deformity by sinking in of the bridge. This accident, if not remedied by an autoplastic operation, will be a source of lifelong sorrow and regret. The prognosis is somewhat less grave, when the ulcerated condition of the nose is due to syphilis than to some other cause, since the iodides, and especially the iodide of potassium, have frequently the power to arrest the progress of the disease, before any deformity has taken place. When the ulcerative process is, however, already extensive, and the nasal passages are generally implicated in the disease, even the iodides fail, at times, to relieve notably, and the disease progresses in an inevitable manner, until much functional distress and physical deformity are produced. On account of the constant inhalation of an air which has become poisoned by its passage over fetid, decomposing secretions, the general health finally becomes impaired, and loss of strength, emaciation, with anorexia and intermittent diarrhœa, may appear.

Treatment.—It must be both local and general. Except those cases which are due to a traumatism, a foreign body, or toxic influences, the majority of instances depend upon a general blood-dyscrasia. If an evidently strumous constitution be present, give such internal medicines as appear most useful in changing or correcting the constitutional condition. Of these, cod-liver oil and the iodide of iron are, according to common consent, the most efficient. Salt and sulphur baths, taken at the sea-shore, at some well-known mineral springs, as those of Sharon, Richfield, or the White Sulphur Springs, in Virginia, or artificially made at home, or in one of the bathing resorts of our city, are likewise important. Taken twice or three times a week, these baths have an undoubted value. They are at once alterative and decidedly invigorating.

While the constitutional treatment, through general internal or external medication, by means of drugs or baths, should be systematically employed, hygienic influences and surroundings are

of equal importance. To the strumous constitution, good ventilation, sunny exposure, and life in the open air, are imperatively required. Attention to diet and sleep should not be ignored. As good, healthful food, as plenty of rest, is desirable for all persons, to these in particular they must be an object of special care. No late hours of retiring, no made dishes or rich sauces, should be tolerated. Eight hours of sleep and rest, and boiled meats, with abundance and variety of fresh vegetables, when they can be had, are very desirable. The cruciferæ is the botanical family which furnishes the most valuable plants for the frequent daily consumption of the individual affected with a strongly marked lymphatic temperament. To him watercress, horseradish, chicory, onions, cabbage, are not merely to be spoken of as aliments not to be rejected, but as those particularly to be recommended.

Notwithstanding attention to all the details of treatment just indicated, an ulcerous coryza of strumous nature, if at all advanced in its local destructive march, will not often get entirely well, or indeed make any progress toward recovery, unless topical applications are begun. Preceding those which are directly curative in character, use should be made of ordinary means of cleansing the nasal cavities, at least in part, of the excessive muco-purulent fluid discharges or of the inspissated, somewhat hard crusts which obstruct them to a greater or less extent, and which, unless gotten rid of wholly or in part, prevent all satisfactory and curative local treatment from being carried out. The nasal douche, employed with great care and timely advice as to its method of employment and the precautions to take while making use of it, is occasionally almost essential to loosen or detach the contents from the middle and lower nasal passages. Whenever I can, however, I recur to other means than this one. I detach the masses of mucus, if there be any, which come within range of straight or curved forceps by this means, or I employ a straight or curved brush of suitable size, which is passed inside of the anterior orifices, or into the naso-pharyngeal space, until the view of the affected surfaces is to a certain degree disclosed. Afterward, I advise or make use of the post-nasal syringe or the coarse atomizer, to soften and loosen, or further to liquefy, whatever secretions are still visible or present in the nasal passages. With the douche, as well as with the syringe or spray-producer, the water should be warm, and to every pint of fluid, or in a suitable proportion, one drachm of ordinary salt, of phosphate, borate, or bicarbonate of soda should be added. The objects of this addition, as is well determined already, being first to prevent osmosis toward the mucous membrane from the cleansing fluid; second, to dissolve more easily

the mucus contained in the nasal passages. Unless this addition be made, and the temperature of the fluid be at least blood-heat ($98\frac{1}{2}$ ° F.), headache and stuffiness are produced or much increased. When these washings have thus been regularly made for a certain length of time, perhaps a few days or a few weeks, they form in less quantity, and if they do form rapidly, are more readily washed away. After a thorough cleansing, which requires from five to ten minutes at first, the diseased parts are ready for topical applications which are directly curative. Mild astringent sprays of zinc sulphate (2 to 5 grs.— $\frac{1}{2}$ i.), of alum (2 to 5 grs.— $\frac{1}{2}$ i.), of tannin (5 to 10 grs.— $\frac{1}{2}$ i.), to which is added a certain quantity of glycerine (3 i.— $\frac{1}{2}$ i.), are occasionally beneficial. Anodyne and balsamic vapors, whether dry or combined with steam, are now and then indicated and successful in combating excessive pain and tension, or other unpleasant sensations in the nasal cavities. Incidentally, they are of use in softening the hardened crusts which are intimately attached to the underlying pituitary membrane.

Of those vapors which have been variously recommended, I can, from my own experience, speak favorably in regard to succus conium, paregoric, turpentine, ol. pinii sylvestris, compound tincture of benzoin, creasote, iodine, carbolic acid, and volatile oil of eucalyptus. If employed as a steam vapor, the essential oils are first combined with a sufficient quantity of carbonate of magnesia and then added to water near the boiling point, and inhaled by means of some convenient inhaler, as that of Maw, with a conical end specially fitted to the nose. The proportion of active ingredient may be gradually increased, according to the sensitiveness of the patient. The initial quantity should not be more than ten to twenty drops to the pint of hot water. The point to be determined is to find out, by several trials, just about the amount of vapor which the patient's sensitive membrane will bear with most obvious agreeable and beneficial effects. The inhalations may be employed twice or three times a day during five minutes, and ought never to be used when one is going into the open air within an hour after their employment. The great objections to the inhalations are the trouble of using them, and the small curative results which proceed from them. Powders, in my estimation, are far more useful than the foregoing. When used daily, twice or three times a day, after thorough cleansing, they certainly should be praised quite warmly. Of these powders I consider iodoform, calomel, tannin, and nitrate of silver, combined with some inert powder, or indeed with bismuth, as the most efficient. Iodoform, in my hands, has done better than any other for a frequently repeated application. It is alterative, healing, and anodyne. Its great drawback, as is generally

known, is its penetrating and to some people offensive odor. Nothing we are familiar with, and which at the same time is suitable or desirable to incorporate with it, masks this odor entirely. The best ingredient to compound with it, in order to mask its odor in part, and perhaps to increase its curative effects, is a small proportion of tannin (1 to 5 grs. — 3 i.). When there is pain in the nasal mucous membrane around the ulcerations, morphine in addition is very useful, and diminishes or dissipates the suffering after a time. When an ulceration is seen, either on the septum, turbinated bones, or in the naso-pharyngeal space, it should be occasionally touched with the nitrate-of-silver stick. Stronger caustics, such as the acid nitrate of mercury, chloride of zinc, potassa fusa, nitric or sulphuric acid, I have not found useful in instances that I have seen or cared for. In fact, I have observed cases where they have apparently been harmful by exciting inflammation, or too considerable reaction. Certainly they have never seemed to improve the local condition beyond what is accomplished by a milder caustic. Further, in applying the latter, we are not called upon to be so extremely careful to touch the precise points which are most diseased.

In syphilitic cases, which are, in my belief, altogether the most frequently met with, constitutional medicinal remedies are of far greater value than those employed in scrofulous cases. As, almost without exception, instances of ulcerous coryza belong, in syphilitic subjects, to the tertiary form of this disease, whether it be hereditary or acquired, mercury is rarely of great use when given alone in any one of its familiar forms. We should rely mainly on the mixed treatment, or treatment solely by moderate and increasing doses of iodide of potassium, until the syphilitic virus is eradicated from the system. I have, unquestionably, known instances where Gibert's formula was the very best treatment to adopt, and again, I have known patients in whom only very large doses of iodide by itself finally seemed to arrest the destructive march of the local attack of the disease.

There is one remark to be made in regard to the iodide, which has its value, and it is this : Now and then, while the iodide is being taken, even by a patient with well-marked syphilis, the fulness or stoppage in the nasal passages instead of diminishing is obviously increased. Upon close inspection of the pituitary membrane it is seen to be covered over with disseminated red patches, which are the immediate effect of the action of the iodide. These patches may be present even when other symptoms of iodism are absent. Now, then, if we remark them, and at the same time remark the augmented occlusion of the nasal passages mentioned above, we should not consider either symptom as proof of a more aggravated march of the syphilitic poison.

and, therefore, an imperative reason to increase the dose of the iodide, but rather a sufficient reason, unless other symptoms contra-indicated it, to diminish the amount of drug being taken at the time. Other drugs may be useful in repressing the constitutional disease, such as wine of coca (Taylor), or McDade's syrup (Sims), but they are, at best, but adjuncts of the usual treatment, and should never be employed to the exclusion of this method. What has been said, in speaking of strumous ulcerous coryza, in regard to baths, hygienic surroundings, habits, is equally or even more important, perhaps, in the cure of syphilis of the nose.

I have good reasons for affirming that the same methods, drugs, and manner of applying them, are well suited to both forms of disease. Of course, if in either affection the expired breath become notably offensive, we must make occasional or daily use of such remedies as will do away, as far as may be, with this very objectionable feature of these diseases. Carbolic acid, permanganate of potash, solution of chlorinated soda, thymol, salicylic acid, chloral, may be added to the water containing the alkaline salt, which is employed for cleansing purposes. The amount to be added will depend upon the susceptibility of the patient to pain caused by this addition, and upon the more or less difficulty with which the nasal passages can be kept passably well deodorized.

Thirty minims to a drachm of carbolic acid to the pint of fluid is about the proportion most usually required. One to five grains of permanganate of potash, one to five minims of thymol to the ounce, are suitable proportions of these drugs to be used with the douche, syringe, or nasal spray. A much larger proportion of liq. sodii chlorinatæ may be effectively used, and will sometimes show itself, as it does in fetid discharges from the ear, to be an excellent deodorizer.

Whenever a piece of denuded bone has become a sequestrum and is movable, if it be within sight or range of instruments, it should be carefully and gently extracted. Such pieces of detached bone are sometimes seen either with the speculum nasi or by means of the rhinoscope, or else are readily detected by means of a bent probe. Search should be frequently made for them during treatment of the case, because they have been known to become spontaneously separated at times, to fall into the throat and occasion symptoms of strangulation by obstruction of the œsophagus or the larynx. In the latter position, we can understand, they could become lodged, and, unless speedily brought away by a curved forceps, might occasion sudden death. Besides such an alarming possibility, there are sufficient reasons to bring them away when feasible, as they will often remain

fixed far away in some remote spot of the anfractuous nasal passages, and are with difficulty, and only after a considerable length of time, detatched spontaneously by frequent and forcible efforts of blowing or hawking, from their seat of lodgement.

Meanwhile, and during all the time they remain within the nasal passages, they occasion more or less abundant and fetid discharges. Sometimes, indeed, the use of the douche so far detaches them that after a time they are blown out without ef-

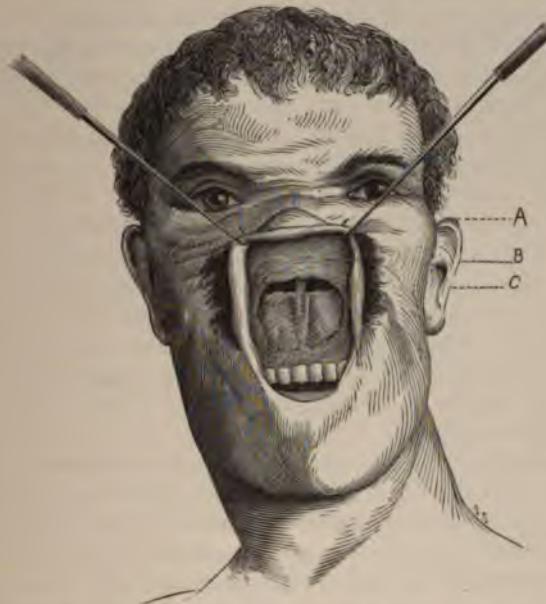


FIG. 110.—Drawing showing Rouge's Operation.* A, Extremity of the turned-up nose; B, section of the mucous membrane; C, entrance of the nasal fossa.

fort, and unless the patient be on the watch for them may escape without notice. It is advisable, however, as I have said, not to wait for this occurrence, whenever they are detected by the probe, and at the same time appear to be completely separated from the more healthy bone, and can be brought away by the forceps without causing great pain, and without any undue traction being necessary.

When all the preceding means have been used thoroughly and during a considerable period of time—several months, a year, or more—the question may be seriously considered, if the local condition remains stationary, or, indeed, gradually, but surely grows

* In this drawing, the nasal fossa should be more open; the superior maxillæ are a little too high, which raises the floor of the nasal passages (Rouge).

worse, whether some operative procedure should not be advised and carried out. Three methods of operation are to-day received as indicated under like circumstances. The first, which originated with Rouge, of Lausanne, and was originally employed by him in 1873, has since been tried by more than one foreign surgeon of eminence. In the United States, so far as I know, no surgeon has hitherto performed Rouge's operation. For his operation Rouge asks very great approval, and states that he has had many complete and remarkable successes, where all previous treatment had been wholly valueless in doing good to the patient. The operation consists essentially in separating the upper lip from the superior maxilla by an incision in the labio-gingival groove extending between the two first molar teeth on either side. The inferior portion of the cartilaginous septum is afterward cut through, and sometimes the alæ of the nose separated also from the maxilla. After doing this, the operator is able to turn the nose up over the forehead, and the nasal passages are freely visible to inspection. The opening is then sufficiently patulous to introduce the finger or any necessary instruments into the nasal passages, and to separate from them any portions of diseased bone which may be discovered. When the operation is completed, the nose is again placed in the normal position, and the divided parts unite again very readily and without occasioning the slightest deformity.

Rouge claims for this operation great immunity from danger, and in only two cases did he have deaths to deplore, and these were occasioned by other conditions (?) than those which could be directly attributed to the operation itself. Trélat has performed this operation after the indications of Rouge ; he had considerable hemorrhage and difficulty in performing it, no successful result after the patient recovered from the operation, and is of opinion that it should not be done. It appears to me that, given suitable conditions and other plans having failed completely of success, the operation of Rouge should be tried more frequently than it has hitherto been done. Of course it must always be remembered that when the constitutional condition is such as not to be affected by either internal remedies or local treatment, long, carefully, and assiduously employed, it is possible, or even probable, that after the most thorough operation, according to the method of Rouge, new bone will become ultimately involved in the disease, and in that case the operation is really shown to be only a palliative procedure of questionable utility. Notwithstanding this view, it can be affirmed with truth that there are some instances in which it would appear that, if the local condition be once effectively treated, so that no dead bone remains behind as a constant focus of irritation and ¹

diseased action, the general remedial measures and continued topical treatment will then be sufficient to prevent the parts from getting again in as bad condition as before the operation was performed—even though an absolute cure cannot always be effected. One great difficulty in arresting the march of the disease, even by an operation as radical as that of Rouge, appears to reside in the fact that the diseased bone cannot always be distinguished or separated from the healthy bone. In order to accomplish the latter, the risk is great, if one is not very wise and careful, of destroying much good, healthy structure, which if allowed to remain would prevent the bridge of the nose from sinking in subsequent to the operation, at a greater or less interval of time. According to Spencer Watson, Rouge's operation is only required for those instances of ulcerous coryza in which there is constriction between the vestibular portion of the meatus rhinarius and the deeper parts of the nasal cavities. Under these circumstances, it affords wider openings for the introduction and manipulation of instruments. If, however, the difficulty in the effective use of instruments comes from the constricted internal *bony* nasal orifices, Rouge's procedure only facilitates the extraction of necrosed bone, in so far as it lessens the distance between the nares and the orifices situated at the beginning of the rigid deeper constriction. This advantage, as regards the use of instruments, seems to be more than balanced by the not infrequent hemorrhage, which is occasionally profuse and difficult to arrest.

The other operation which should be considered is the one first introduced to the profession of the United States by Dr. D. H. Goodwillie,* and subsequently performed by Wagner, Seiler, Jarvis (?) and others. It consists in the extirpation of those portions of the bones of the nose which have become affected with caries, or necrosis, by the use of the surgical engine.

"This is formed of a fly-wheel, set in motion by the foot, a driving-pulley, and a communicating cord. On the top of the upright, movable shaft the pulley is connected to a flexible wire cable, inclosed in a flexible sheath. This cable is connected with the hand-piece, in which can be put any revolving instruments. The flexibility of the wire cable allows the instrument in the hand-piece to be freely used at any angle. The hand-piece, held in the hand as you hold a pen, is under perfect control. The instruments are securely fastened to the hand-piece by means of a spring-catch." These

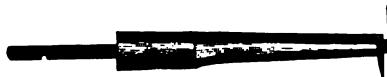


FIG. 111.—Single Revolving Knife
(Goodwillie).

consist of the single revolving knife (Fig. 111); the multiple revolving knives (Fig. 112), made at times with a protecting sheath to be used when necessary; saws and trocars (Fig. 113).*

The operation is usually performed while the patient is anaesthetized, at first by means of nitrous oxide, subsequently by inhalation of ether. If strong objection, however, be made to anaesthesia, it may be done without, as it is not extremely pain-



FIG. 112.—Multiple Revolving Knives (Goodwillie).

ful, and can be endured by a person of strong will. The hemorrhage resulting from the operation is usually not severe, nor the reaction excessive. Even when the nasal septum and bony palate have been removed, the external appearance of the nose has remained unaltered in shape. The author has never seen the nose fall in, except when the cartilage or nasal or maxillary bones were involved—in other words, the bridge of the nose. The results obtained have been in several cases very remarkable,

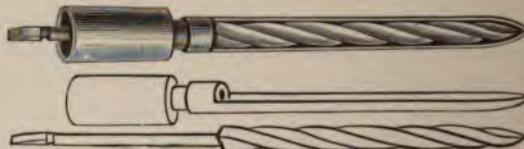


FIG. 113.—Trocar, with and without Protecting Sheath (Goodwillie).

and entitle the author to high praise. Certainly, when managed with accuracy and skill, the surgical engine may in some well-defined cases be favorably compared as an operative means with a bloody surgical procedure which necessitates extirpation of nearly half the superior maxilla and all the periosteum, and leaves the patient with an indelible deformity for life—partly the result of loss of bony structure, partly the consequence of extensive external incisions. In one reported instance by means

* In Dr. Goodwillie's original article, to which the reader has been referred, there is a figure (3) representing a knife within a sheath. This instrument is *not* used, at present, by the inventor (written communication, November 7, 1884), but, in its place, an improved instrument, represented above as Fig. 113, which is far superior to the former one, and may be employed with or without the sheath, as seems most desirable.

of the surgical engine, "the necrosed vomer, lower portion of the ethmoid, both inferior turbinate bones, and the vault of hard palate, were removed by the revolving knives through the nostrils," and a perfect cure resulted.

We have given in the preceding description a sufficient account of the instrument, method, and result of operation after this manner, as Rouge's operation, so Goodwillie's, is only in my opinion applicable to very bad cases of ulcerous coryza in which

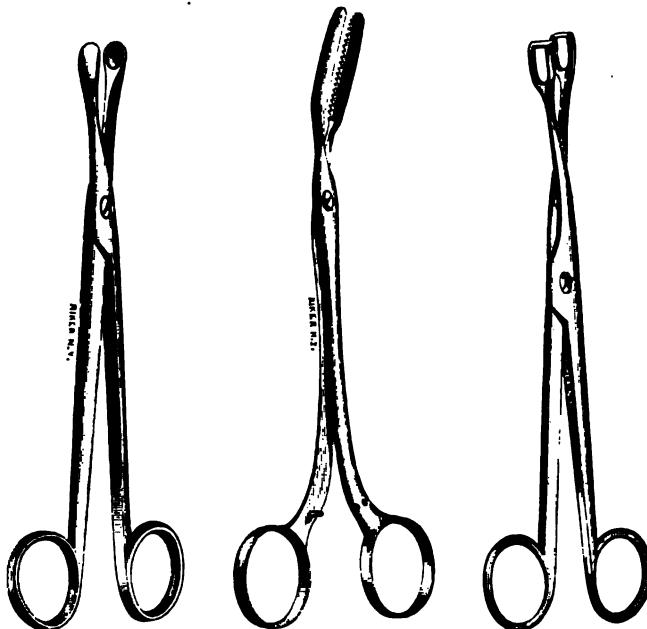


FIG. 114.

FIG. 115.
Cutting Forceps (Wagner).

FIG. 116.

FIG. 117.—Wag-
ner's Nasal
Probe.

all other previous methods have completely failed in arresting or influencing notably the progress of the disease. I do not know of any case in which the surgical engine, thus employed, has produced any serious consequences. It is evident, however, that its employment, to be successful, requires a thoroughly trained, cool, and skilful hand, a perfect familiarity with the anatomy of the parts, and a knowledge of the sounds and sensations given out by the rapidly revolving knives when they reach comparatively healthy structures. Both before and subsequent to the operation described, use is made of an impalpable powder, blown into the nasal cavities, of iodoform and camphor, each one part, and subnitrate of bismuth,

eight parts. At times, a certain proportion of sulphate of potash is added to the foregoing.

Latterly, Wagner has used, with gratifying success, different forms of cutting forceps (Figs. 114, 115, and 116) for the extraction of necrosed bone. In his work, just published, on "Diseases of the Nose," * he reports two cases in which he removed the turbinated bones and a large portion of the vomer, and a cure followed in the course of a relatively short period. For purposes of exploration, in these cases, Wagner's nasal probe (Fig. 117) which is made of silver and flattened at one end, is a serviceable instrument. The flat extremity adapts it especially for use when it is important to know whether or not stenosis exists.†

Within a relatively brief period, those cases in which tertiary syphilis had produced more or less complete adhesions between the velum and pharyngeal walls, were most unwelcome to the throat specialist, on account of our imperfect methods of treatment, and the poor results obtainable.

Now there appears to be a probability that we shall be able permanently to relieve some of the worst cases in a very satisfactory manner. Whenever there is even a small opening between the upper and middle pharynx, the prospects of the patient are brighter than when there is total occlusion between these cavities. If the orifice of communication be large enough to admit a body the diameter of a goose-quill, we can hope, by persistent dilatation with graduated steel sounds, or other suitable dilators, to enlarge the opening sufficiently to afford the patient relative comfort. If, on the other hand, the orifice be very small, or not discoverable, it becomes a question as to the necessity of a cutting operation. Of course, even with an extremely small opening, which is just sufficient to allow the passage of a probe, we may yet hope to accomplish what Dr. Andrew H. Smith has done, viz.: its very considerable enlargement by systematic dilatation. But, if this fails to give relief, or if, as I said, there be no opening discoverable, a cutting operation must be performed. Now, this operation is usually not difficult of itself. A covered steel sound of suitable calibre may be passed through one or other lower meatus until its point presses upon the membranous wall which separates the two portions of the pharynx. Upon this point, as it is seen through the mouth pressing from above, an incision should be made with a bistoury. This opening may then be enlarged with curved scissors until a sufficient passage is afforded for breathing and drainage of nasal secretions. A great difficulty arises at this time, and it is to prevent the re-forma-

* Pages 91, 92.

† This is, of course, particularly desirable in cases of deflected septum, or of bony growths in the nasal fossæ.

tion of adhesions between the cut surfaces, which would, sooner or later, make the patient's condition as bad as it was previous to the operation. Hitherto, many devices have been tried in order to keep the cut surfaces apart until they were completely healed, and, even after this was effected, to avoid, if possible, the closing up of the opening artificially made, in consequence of the continuous tendency of cicatricial tissue to contract. Rubber cords have been passed through the wound immediately after completion of the operation and their extremities brought through the nose and mouth and tied together. After these had been in the wound and drawing gently for several weeks upon the encircling margin, plugs of different kinds have been introduced in rubber or silver, and fixed to the upper molar teeth by eight clamps, or held in the orifice by wires passing through the nasal cavities. The results obtained were usually very imperfect, and the annoyance to the patient long-continued and great.

Latterly, Dr. D. Bryson Delavan has had a patient, in whom, after uniting, by means of an incision, two small orifices which were present on either side of the uvula, the raw surfaces were thoroughly cauterized by mono-chloracetic acid. In consequence of this cauterization an adherent, tough scab of devitalized tissue formed all over the denuded tissues, and thus adhesion between the margins of the wound was wholly prevented. Under the scab formed at first, complete and rapid healing of the wound took place. This is a triumph, and opens, as I believe, a great future in the successful treatment of similar cases, if the acid referred to does its work equally well in future instances as it did in Dr. Delavan's case. Of course, even though the opening made in the occluding membrane between the upper and middle portions of the pharynx may heal entirely, it should be kept open by the daily passage of a steel sound of suitable calibre. If, for any reason, this be not interfered with only during a few days, already the opening will show a certain amount of contraction. I have tried other dilators than steel sounds, but have not found them to work anything like so satisfactorily. Among these I would mention particularly tupelo tents. These would answer tolerably well if we could keep them *in situ*, but it is almost impossible, and soon they slip up or down, and exercise no pressure upon the walls of the orifice, where alone it is desirable.

The steel sound should be held in place a few moments after its introduction so as to overcome for the while, and in part at least, the resistance of the tense, hard margins of the orifice. If, by the method referred to, the opening made is kept tolerably patulous, the patient's comfort is greatly promoted. He is able

to breathe more easily, and to get rid of his nasal secretions without any great effort. Moreover, his taste and smell both improve, or, indeed, are re-established, and his hearing, if not lost beyond help, may likewise be much ameliorated, either spontaneously or by treatment.

CHAPTER XIII.

ADENOID VEGETATIONS AT THE VAULT OF THE PHARYNX.

THE existence of glandular elements in this region was well known to some of the earlier anatomists. Notable among the number of later writers William Hunter's name should be cited.* It was not a subject of special interest, however, until Luschka gave an accurate and detailed anatomical description of the pharyngeal structure, in 1868.† This interest was greatly enhanced by W. Meyer, of Copenhagen, ‡ who first published an elaborate clinical study of his own investigations in 1870, and who showed that morbid changes, with considerable growth of tissue, were frequent in the adenoid layer at the vault of the pharynx. At what point the morbid change commences, it is somewhat difficult to determine, for the reason that here, as in other regions of the body, there are individual peculiarities. While in many persons there are marked elevations of tissue in the pharyngeal vault, which are separated by fissures or depressions, in others, equally healthy, the normal aspect is that of a tolerably smooth, uninterrupted surface (Fig. 118). As Bosworth § remarks, just as we see instances of faucial tonsils where the organs scarcely are seen between the pillars, and again find those in whom the tonsils are quite prominent organs, and occupy a moderate space in the throat, so we have almost similar varieties, as regards size, of the pharyngeal tonsil. In this same line of thought, a reviewer, H. R. Swanzy, of Loewenberg's brochure || "On Adenoid Tumors in the Naso-pharyngeal Space," writes very wisely, as follows : "Indeed, in some instances, it is difficult to decide whether we have before us an extreme, but yet physiological, development of the pharyngeal tonsil, or a commencing hypertrophy of it. From a clinical point of view, therefore, a diseased condition need not be admitted, unless the increase in volume of the tonsil be such as to inter-

* Some beautiful preparations of this adenoid tissue, both in its normal and pathological condition, have been preserved in the Anatomical Section of the Hunterian Museum, at Glasgow (Medical News, December 15, 1883, p. 648).

† *Der Schlundkopf der Menschen.* Tübingen.

‡ *Medico-Chirurg. Trans.*, London, vol. liii., p. 191.

§ *Journal of Otology*, vol. iv., January, 1882.

|| *Delahaye & Co.*, Paris, 1879.

fere prejudicially with the functions of the naso-pharyngeal cavities."

Still more recent views on this subject may be found in an article by Stöhr * on the conglobate bodies called the "peripheral lymph-glands," where he shows that "the mucous membrane of the pharynx is marked, in its upper portion, by the presence of closely aggregated leucocytes." These appear in this region "as the so-called follicles (adenoid tissue of His, cytogenous tissue of Kölliker, or conglobate gland-substance of Henle)." This tissue, in parts, assumes the shape of



FIG. 118.—Vertical Section of the Pharyngeal Tonsil, somewhat larger than normal (Luschka). 1, Basilar fibro-cartilage; 2, internal pharyngeal fascia; 3, superior constrictor muscle of pharynx; 4, lacunae of tonsil; 5, section of single capsule with follicles in wall; 6, acinose mucous glands.



FIG. 119.—Adenoid Tissue of Vault of Pharynx (Luschka). Posterior Wall of the Superior Portion of the Human Pharynx, seen from before backward, upon a Transversal Section. Natural size, after Luschka. 1, 1, Pterygoid process; 2, section of the vomer; 3, 3, posterior portion of the vault of the nasal fossae; 4, 4, pharyngeal orifice of the Eustachian tube; 5, orifice of the pharyngeal pouch (bursa pharyngea); 6, 6, recessus pharyngeus (fossa of Rosenmüller); 7, median folds formed by the adenoid substance of the nasal portion of the pharynx.

prominences, partly projecting into the pharyngeal cavity and partly sunk in the depth of the mucosa. These are often complicated by numerous infoldings, and thus are formed the follicles and tonsils (palate, tubal and pharyngeal tonsils). Steatified epithelium covers the surface and follows it through all the furrows to their deepest parts." In addition to the views just re-

* Virchow's Archiv, Bd. 97, s. 211 (Boston Medical and Surgical Journal, November 27, 1884).

ported, Bickle * has endeavored "to determine exactly how far adenoid tissue extends in the pharynx, and what structures in this part are to be considered as tonsils."

According to his description, "only the tonsils of the pharynx deserve the name in addition to those of the fauces." "From a comparison of the published descriptions of the pharyngeal region, it can be stated that there is a perpendicular ring of lymphatically infiltrated mucous membrane, marked by scattered follicles. This begins above with the accumulation at the vault (pharynx tonsil), and passes then to the opening of the Eustachian tube, where there is another aggregation of follicles."

Professor Waldeyer has given to this and its continuation downward the name of the "lymphatic ring of the pharynx."

The accompanying figure (Fig. 119), taken from Luschka, gives what may be considered as a normal appearance of the pharyngeal vault, in some instances. Whenever the glandular elements at this region develop into a morbid growth, the bulk of tissue becomes much enlarged, assumes the aspect of rounded, or pedunculated masses, and covers a wider area of surface. As to their intimate structure there is not much difference of opinion ; authors usually declaring them to be but a hyperplasia of glandular tissue, adenoid in character. To this belief there is one dissenting voice, since Woakes † affirms that they are of papillary nature. His belief is based mainly on the facts : First, that he has never discovered a duct follicle in this tissue, such, indeed, as we should be sure to recognize if we had to do with real glandular structure ; second, he has found in these masses an hypertrophy of "fibrillar structure" surrounding the central vessels, and extending from the base of the growths almost to their periphery. Woakes regards the thickened mucous covering of these vegetations as a condition dependent upon their location. Other writers and observers have never seen growths which confirmed Woakes' statement in regard to their true nature, hence his experience requires to be corroborated.

Not always does the hypertrophied glandular tissue cause symptoms sufficient to direct attention to it. Sometimes it has been discovered almost by chance, or while search was being made as to the condition of the Eustachian orifices, in old aural diseases, or when an attempt was made, with the rhinoscopic mirror, to see if the Eustachian catheter had penetrated the tube. Whenever it is moderately developed and brought under close inspection, there will be seen upon its surface numerous depressions, which are either the external orifices of the acinous

* Loc. cit., a. 340.

† Proceedings of the International Congress, held in London, August 2 to 9, 1881, subse-
tion Diseases of the Throat, last meeting, August 9th, p. 292.

glands contained in its structure, or the marks of depressed follicles which closely resemble the solitary follicles of the large intestine. So closely does this tissue resemble that of the tonsils, according to Kölliker, that the name of pharyngeal tonsil * has sometimes been given to it. It is usually of quite soft consistency, although intimately attached to the cartilaginous layer, which separates it from the base of the skull. An orifice, which communicates with the pharyngeal pouch, and is about the size of a pin's head, is found at the median and lower portion of this glandular tissue.

The existence of this adenoid tissue at the vault of the pharynx has considerable pathological interest, mainly on account of its tendency, in some instances, to become hypertrophied and inflamed, and, very rarely, ulcerated. Cohen has had the opportunity of studying this tissue very closely on the living subject, where there has been a congenital cleft of the hard and soft palate. The illustrations which appear in his work (pages 256, 257) portray well the aspect of the naso-pharyngeal space in this condition. Adenoid vegetations at the vault are rarely seen after middle life. If they be present and occasion annoying symptoms, they are ordinarily discovered in youth, or adolescence. Fortunately, they are not nearly so common in the United States as they are in Denmark, and in other countries of Europe. This is my experience. And yet, it is not by any means that of all who, in or near this city, have an opportunity to see many throat and aural cases. Thus Dr. R. E. Swinburne writes : † "At the Harlem Eye, Ear, and Throat Infirmary, since its organization in January, 1882, up to September, 1883, 148 patients applied on account of throat and nasal affections ; 15, or one in ten, had adenoid vegetations. In 325 *throat* and *ear* patients, I found 42 cases of glandular hypertrophy."

Meyer reports, out of 2,000 children examined in Copenhagen, the existence of these vegetations 20 times. In almost every instance their presence was marked, according to him, by a "dead" pronunciation and a sensation as of "earth-worms" given to the examining finger when introduced behind the soft palate. When the vegetations are large, the soft palate may become so much thickened that a satisfactory examination with the small pharyngeal mirror cannot be obtained. The configuration of these growths differs considerably. Sometimes they are very similar in appearance to the follicles one sees in chronic

* According to Bosworth, this tonsil is subject to the same acute hyperemia and follicular inflammation, that the faucial tonsil is. Indeed, this author goes so far as to affirm that in little children the symptoms of coryza are usually caused by acute swelling with hypersecretion of this organ (New York Medical Record, October 4, 1884, pp. 366, 367).

† New York Medical Record, October 6, 1883, p. 373.

pharyngitis. Usually, however, they are of larger dimensions, and more closely juxtaposed. I have not seen, as well as I can remember, any instances of the marked fimbriated variety to which Meyer refers. Only a few, relatively, of the large, pendulous vegetations, with smooth surface and pink color, have ever come to my Throat Clinic, formerly at the Manhattan Eye and Ear Hospital, and during seven years past at the Out-door Department of the New York Hospital. One of the most remarkable of these growths that I have seen was discovered by me in a young woman, suffering from phthisis, at St. Luke's Hospital, April 30, 1882. (See records of the hospital.) The adenoid hypertrophy was readily removed by means of Bosworth's modification of Jarvis' snare, and I afterward presented the specimen at a meeting of the New York Clinical Society. The following is a brief history of this case :

Laryngeal phthisis; eczema of ear; adenoid post-nasal tumor.—E. P., twenty-four years old; single; saleslady; born in the United States; entered St. Luke's Hospital March 8, 1882. One year before entering the hospital she contracted naso-pharyngeal catarrh, which has never left her. Physical examination showed catarrhal discharge from pharynx; nasal polypus in right nasal fossa posteriorly; discharge from ears and excoriation of parts about external meatus.

April 3d. Examination of larynx showed some inflammation and clubbing of left arytenoid cartilage.

April 13th. Patient has considerable pain in throat, and some huskiness of voice. Posterior rhinoscopic examination showed ulceration of mucous membrane covering inferior turbinate bone on left side. Adenoid growth just behind upper portion of septum, and apparently adherent; both Eustachian tubes open and full of mucus.

April 26th. Raised a little blood this morning.

April 30th. Adenoid tumor above described removed by aid of snare écraseur (Bosworth's modification of Jarvis'), the loop being introduced through the posterior nares. The tumor was easily engaged in the loop and came away with slight hemorrhage. The growth as removed was about the size and shape of a chestnut, and had apparently a distinct pedicle.

May 12th. No vestige of the tumor made out. A few adenoid growths were seen upon the posterior portion of the septum. Dr. Robinson operating, rubbers were passed through the nose and drawn through the mouth and fastened back of the head. In this manner the soft palate was drawn forward and upward out of the way. A small blunt uterine curette, bent to the proper angle, was passed backward and upward through the

fauces and into the posterior nares, until the growth was reached. It was then a very simple operation to scrape it off. Little or no hemorrhage resulted, and the patient suffered little pain.

May 20th. No sign of return of the tumor. Cough has disappeared. No discharge from the ear. Still slight clubbing of left cartilage of Wrisberg, with considerable redness. *Discharged improved.*

If, therefore, I were merely to consider my own experience in private, hospital, and dispensary practice, I would state emphatically, that adenoid vegetations of the latter type are relatively rare in New York City. I have been told, however, by a friend and distinguished specialist of this city that he has already operated for such hypertrophied masses very many times. Singular, also, to relate, I have yet to encounter a single instance in which one of these growths compressed to any appreciable degree the Eustachian orifices and occasioned impaired hearing in this manner.

I presented the case of a young woman at the Practitioners' Society last spring, meeting of May 5, 1883, who with a pronounced deflection of the nasal septum, had a large single pendulous adenoid growth, hanging directly down from the vault of the pharynx, behind the posterior border of the nasal septum, and partially obstructing both posterior nasal orifices. In this case there was deafness in one ear, but it was not caused by pressure from the glandular hypertrophy, nor was the hearing defective on the side where the nasal passage was occluded by the deviated septum, and, singular to say, "the voice was not at all affected." * The adenoid hypertrophies which I have observed have usually been moderately soft to the touch, but not very sensitive, and have rarely bled, even a little, when examined by the finger with a moderate degree of gentleness. Certainly, the use of a spray, or douche from the posterior nasal syringe, has never caused them to bleed. These growths are ordinarily covered with more or less grayish viscid mucus, which is difficult to expectorate, and occasions, doubtless, some of the uneasy sensations from which such patients suffer. They do not, however, occasion as much mucous discharge from the post-nasal space as do some forms of nasal catarrh with smooth, but general hypertrophy of the nasal and naso-pharyngeal mucous membrane.

One of the most characteristic symptoms of glandular hypertrophy, at the vault of the pharynx, according to Meyer, is the defect of speech which is constantly met with. *M* and *n*, Meyer states, are pronounced as *b* and *d*, viz.: instead of the patient

* See report of case, New York Medical Record, July 21, 1883.

saying, "common," when called upon to do so, he will say "cobbed," "sodg" in place of "song." I am unable to corroborate this statement of Meyer, in an *absolute* sense, by any case I have myself observed. It is true, however, that I have occasionally remarked that the enunciation of certain words was lacking in clearness; the nasal passages had lost their normal resonance, and there was a peculiar stuffy pronunciation, which was perhaps specially noticeable whenever the nasal consonants were articulated.

From this condition to that in which there is the true "dead" voice, so-called, is perhaps not very far. The following abstract of a detailed history, with the accompanying drawing, was given to me several years ago by Professor George M. Lefferts, of New York, and as it affords a very striking example of glandular hy-



FIG. 120.—Adenoid Vegetations at the Vault of the Pharynx (Lefferts).

pertrophy, in one of its varieties, I report it here, for the second time.*

"A. W., aged nineteen, suffering from obstruction of the nasal passages, associated with progressive deafness. Voice changed; marked deficiency in the nasal sounds, the tones of *m* and *n* resembling those of *b* and *d*. Rhinoscopic mirror exhibited, as shown in the drawing, a most remarkable glandular hypertrophy of the adenoid tissues at the vault of the pharynx." Treatment for four months, by all the means usually recommended, without attaining any marked result. Reduction of the mass, finally, by means of the posterior pharyngeal forceps, followed immediately by thorough cauterization with solid nitrate of silver.

Besides the marked defect of speech to which I have just referred, the patient is apt to complain of a sensation like that produced by a foreign body in the naso-pharyngeal cavity. It has been stated that, frequently, a great deal of thick, grayish or

* New York Medical Journal, March, 1875, p. 264.

greenish mucus constantly trickles down behind the velum. When this has been true, there must have been a very considerable degree of hypertrophic nasal catarrh present. Occasionally, the sputa are said to be tinged with blood, especially in the morning. This symptom, if it exist, has assuredly nothing characteristic about it, since it may occur with any case of advanced catarrhal inflammation of the naso-pharyngeal space. The nose takes a flattened, pinched, contracted form from side to side, and a decidedly broader configuration at its base than is usually met with. This sign, when it is observed, must be considered as almost characteristic, and differs, at any rate, very much from the reddened and swollen appearance around the nares and in the interior of the nasal passages which we encounter in chronic hypertrophic catarrh of this portion of the respiratory tract.

Inasmuch, however, as it is not uncommon to have this form of chronic nasal catarrh at the same time that there is pre-existent or concomitant glandular hypertrophy at the vault of the pharynx, it can be appreciated how it is that we may have occlusion of the nasal passages which is quite as much caused by the thickened pituitary membrane, as by the hyperplasia of adenoid tissue in the retro-nasal space. If both these morbid conditions be present, the lower portion of the nose may be flattened in an antero-posterior direction, while the upper portion may be more pinched from side to side than it is normally. Thus the nose may be in reality broader below than it



FIG. 121.—Adenoid Vegetations in the Naso-pharyngeal Cavity; Cylindrical Vegetations on Right Lateral Wall of the Naso-pharyngeal Cavity, Covering the Opening of the Eustachian Tube; Remains of Vegetations after Operations on Fornix and Left Lateral Wall (after W. Meyer).

should be, and seem particularly exaggerated when compared with the upper portion. At times it is almost impossible for the patient to keep his mouth shut, either during the day or at night when asleep. This is due to the fact that free nasal respiration cannot be carried on. Patients thus affected have, on this account, rather a vacant and silly expression. At night they snore when asleep, and awake in the morning with the sensation of extreme dryness of the throat. At times the hearing is more or less affected, and when it is, the aural defect is usually due to extension of the accompanying catarrhal disease, and not to compression of the Eustachian orifices by the adenoid vegetations. In this belief I am glad to find myself in partial accord with Dr. Swinburne, who states* that the aural disease accompanying adenoid vegetations of the pharyngeal vault "is caused almost

* Loc. cit.

if not entirely, by an extension of the inflammation during an attack of acute naso-pharyngeal catarrh, to which patients in this condition are predisposed."

Of course, there may be rare exceptions to the view I hold, and, in support of such exceptions, I would cite one of Meyer's cases, of which the accompanying drawing (Fig. 121) gives a faithful picture, and in which the adenoid vegetations on the right lateral wall of the naso-pharyngeal cavity covered the opening of the Eustachian tube, and by this encroachment caused deafness. If the aural catarrh affects the middle ear and becomes chronic, the patient may suffer from vertigo and tinnitus. In my experience, the secondary aural complications of glandular hypertrophy are less frequent than is generally believed. In two private cases and one hospital case, in which the adenoid hyperplasia at the vault of the pharynx was excessive, there was no perceptible diminution in the hearing-power. This is directly opposed to Meyer's statement, inasmuch as he affirms that the best place for observing adenoid vegetations is among ear cases. Out of 102 instances of glandular hypertrophy observed by him, 72 individuals suffered from diseases of the ear.

In Dr. Swinburne's practice at the Harlem Infirmary, 179 patients suffering from middle-ear disease applied to him for treatment, and of these, 27, or 1 in 6½, had adenoid vegetations. In a large proportion, indeed, of ALL cases of adenoid vegetations, the ears were found diseased. The exact proportion given by Dr. Swinburne is 27 out of 42 cases, or about three-fifths of the total number seen by him. "Of these 27 ear cases there were perforations in one or both drum-heads in 14." The only way in which I can reconcile the reported observations of Dr. Swinburne with my own experience is to assume that we do not agree as to what precisely should be considered an *abnormal* growth of adenoid tissue in the pharynx. I have already stated that there are great individual differences in regard to the *normal* amount of this structure which may be present, and, therefore, a little more or a little less of it does not necessarily indicate *disease*. Opposed to this view, however, is the opinion of a distinguished specialist, who has reached what, in my appreciation, is an extreme conclusion viz. : that anything like a prominent projection from the mucous membrane of this region is evidence of morbid action.*

Further, in regard to Dr. Swinburne's statements, it is only fair to add, that others than he have, within a brief period, described the great frequency of aural complications in cases of adenoid vegetations.

* Bosworth, New York Medical Record, October 4, 1884, p. 365.

In England, Woakes claims that five per cent. of persons suffering from these growths have aural disease. He, also, affirms that when the vegetations are seated at the vault of the pharynx, the aural complication is apt to be suppurative otitis, with perforation of the drum, and the after-sequelæ of aural polypus ; whereas, if the hypertrophied glandular tissue be situated on the posterior wall of the pharynx, it is accompanied by great thickening of the adjacent mucous membrane, and this implies "a complete mechanical occlusion of the Eustachian tubes," which ultimately produces chronic non-suppurative inflammation of the middle ear, with sinking in of the membranæ and severer forms of deafness. In those cases of adenoid vegetations of the vault I have seen, suppurative otitis has not occurred.

As to non-suppurative inflammation of the middle-ear occurring as a consequence of "a complete mechanical occlusion of the tubes," this explanation I cannot admit generally to be correct. Further, I take exception, also, to the view which calls chronic follicular pharyngitis, as I believe, adenomatous disease, or post-nasal vegetations.

It is unusual to encounter pronounced adenoid vegetations at the vault of the pharynx, without, at the same time, finding very marked follicular pharyngitis. This fact should indicate to us the importance, when this latter disease is perceived by mere oral inspection, not to be satisfied in our examination, until either rhinoscopic investigation by means of the small mirror or research with the index-finger has been made of the naso-pharyngeal space.

Diagnosis.—Whenever we meet with the symptoms and signs previously given, the existence of adenoid vegetations at the vault of the pharynx should be strongly suspected. In certain cases it may be almost affirmed, provided we are quite sure that the affection is uncomplicated by hypertrophic nasal catarrh, but this is rarely the case, and chronic infiltration of the pituitary membrane is a common source of error. If the obstructed nasal passages have already been successfully treated, and, in their anterior and median portions, are free to a current of inspired air, we are justified in making a probable diagnosis of glandular hypertrophy.

To establish this diagnosis beyond peradventure, we have notably two methods to employ : 1, Posterior rhinoscopy ; 2, digital exploration. The first of these methods, when it is practicable, is, by all means, to be employed. Unfortunately, it is not always available, on account of want of sufficient space between the free margin of the velum and the pharynx. This condition may be a congenital one, or may be brought on by

thickening of the soft palate, and enlarged tonsils. The difficulty of examination may also be increased by involuntary intolerance to examination on the part of the patient. When the difficulties in the way of posterior rhinoscopy are so great as to render this method insufficient or impossible, recourse should be had to the second method, *digital exploration*, which is then our only means to arrive at a certain diagnosis. According to this method, the right index-finger, slightly flexed, is introduced, gently and slowly, behind the free border of the palate, in an upward direction, until it is arrested by the presence of the adenoid growths. These may be of varied consistence and configuration. Sometimes they are hard and resistant; more frequently they are soft and vascular, giving rise, occasionally, to slight hemorrhage after rough contact of any sort; or, again, after a paroxysm of coughing or sneezing. They are flattened, hemispherical, cylindrical, fimbriated, or tessellated. They may fill up the entire naso-pharyngeal cavity; or, again, they may be limited to the posterior portion of the vault.

Usually the tactile sensations are such that there can be no doubt about the presence of the hypertrophied glandular tissue.* These sensations, of course, must differ considerably, according to the number, consistence, size, and shape of the masses or vegetations discovered. An educated touch, such a one as can alone be acquired by a habit of this sort of investigation, will enable one to correctly interpret his sensations, and to appreciate the physical properties of these growths.

I have never found anterior rhinoscopy of much direct advantage in making a diagnosis of this disease. Whenever a portion of the diseased tissue has been removed by the snare or forceps, the microscope may be used to determine its precise pathological structure. It is the opinion of most observers that adenoid vegetations are seen with greatest frequency in youth, and that after twenty-five years of age their appearance is very rare.

Woakes explains the relative infrequency of adenoid growths during adult life in the following way: By reason of the increase of space in the naso-pharyngeal region, there is "freer access of air, readier escape of secretions, and, consequently, greater dryness of the surroundings generally. The soil thus drained and ventilated appears unfitted for the vegetations to flourish upon, and they accordingly disappear." Boys are more likely to suffer from this disease than girls. There is an evident hereditary influence in the transmission of adenoid vegetations,

* In two cases observed by Woakes, in boys between thirteen and fifteen years of age, there was almost uniform cystoid degeneration of the mucous membrane of the post-nasal space. In these instances antero-nasal polypi were also present.

and it is not an unusual circumstance to discover several members of the same family thus affected. In one of the families under my professional care, the mother had adenoid hypertrophy when a girl, as she believes, and recovered from it without an operation. Two children out of five are now subjects of it; one, a girl, having it to a very pronounced degree, the other, also a girl, having it only to a moderate extent. Meyer writes: "I have eleven times found two, seven times three, once four children of the same family affected, and in not a few cases one or both parents were or had been suffering in a similar way." While no country in which special researches in this direction have been made is free from the existence of adenoid vegetations in the naso-pharynx, these growths are, without doubt, oftener met with in some countries than in others. Wherever the climate is cold and damp, there seems to be present the particular atmospheric conditions which favor their development. In Leyden, particularly, the proportion of persons thus affected is very large, as five per cent. of the school-children are said by Professor Doyer to have "characteristic faces and pronunciation."

Although there is an undoubted tendency in certain cases for adenoid vegetations to diminish and entirely disappear with increasing years, this consideration should not encourage us to *let them alone* when they are discovered. Patients who have them are unfortunately more liable to be attacked with inflammatory affections of the throat than others. Children may become victims to asthma for no other reason. When such diseases do occur, they cannot be radically cured, unless the glandular hypertrophy be first effectively treated.

What we have already said in regard to the frequency of aural complications is still a weighty and additional reason why early interference should be adopted, as a wise rule of practice.

Loewenberg, of Paris, describes a special form of thoracic deformity which he believes should be attributed to the presence of adenoid vegetations. He declares it to be different from what has long been known as the typical asymmetry of the chest-walls due to rickets, but probably not unlike that occasioned by enlarged tonsils, as described by Dupuytren. The characteristic features of the deformity insisted upon by Loewenberg are: "The sternal ribs depressed toward the lung; their cartilages, on the contrary, distended toward the exterior, form a series of prominences, without, however, showing the knotty elevations of rickets. The sternum, instead of being carried forward, as in this last disease, is notably depressed, especially the xiphoid appendix, which is often deeply pushed toward the interior." I confess that I have never searched for this deform-

ity, not being aware of its existence, and can only, therefore, refer to its presence as discovered by the author quoted.

Treatment.—*Prophylaxis* is important in this disease. In order to prevent its development Dr. Guye, of Amsterdam, advises that a “contra-respirator” should be worn at night, and sometimes even during the day. The use of this instrument makes it necessary for the patient to breathe through his nose, and thus the air is properly moistened and does not occasion irritation of the pharynx, which is so frequent in those who breathe habitually through the mouth. By wearing a contra-respirator, which is simply a respirator which does not let any air pass, after operation on these growths, Dr. Guye is convinced that relapses will be avoided.

Among curative methods of treatment perhaps the simplest which is really effective is that by repeated scraping the adenoid vegetations with the nail of the right index-finger. This procedure has, it is said, been frequently successful, but I can understand it being so only in cases in which the vegetations are small or cover a very limited area.

It seems proper to make the attempt under these circumstances, and when unruly children are thus affected, for the reasons that it is free from all risk, and does not necessitate the use of an anæsthetic. In order to insure permanent results, scraping with the nail should be followed, when feasible, by cauterization with nitrate of silver, fused on the extremity of a silver probe.

In those instances where the vegetations are tougher and larger, the method just described will not answer. Recourse may then be had to: (1) One of Capart,* who “has suggested the use of a sharp spoon (Fig. 122), which can be fastened to the index-finger by means of a metallic sheath composed of two rings, held together at each side by rivets, so that sufficient play is allowed for them to be moved when the finger is bent. On the palmar surface of the distal ring is the spoon. The little instrument thus serves to carry the blade, and to protect the operator’s finger while it is in the patient’s mouth;” or (2) to that first recommended by Meyer, and practised by him during the past thirteen years or more, with uniform success.

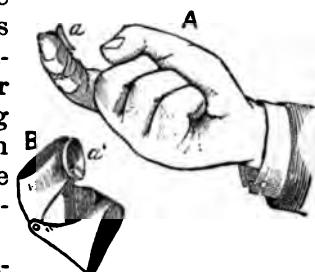


FIG. 122.—Dr. Capart's Finger-sheath with Cutting-spoon. A, the position of the hand and finger in holding the spoon; a, lateral view of the cutting-spoon; B, enlarged view of the two parts of the metal sheath; a', cutting-spoon.

* Mackenzie, *Diseases of the Throat and Nose*, vol. ii., p. 193.

The instruments now employed by Meyer are, first, a curved mouth-gag, made of ebony, covered with two metallic plates and attached to a curved handle (Fig. 123, 1); second, a ring-knife, consisting of a small, transverse, oval ring, with one sharp though not absolutely cutting edge, and fixed on a steel stem and wooden handle (Fig. 123, 2).

The operation is performed as follows: The patient being seated, with the head slightly bent, the gag is introduced and held between the molar teeth on one side, by an assistant. The operator now introduces the index-finger of the left hand behind and above the soft palate. The ring-knife is next passed gently through the left nasal passage, with the axis of the ring perpendicular, and the blunt edge turned toward the septum, until the extremity of the index-finger and the ring of the instrument meet behind the posterior nares. The finger should now press each vegetation, separately, upward against the ring, while the latter, after it has been rotated a fourth of a circle toward the

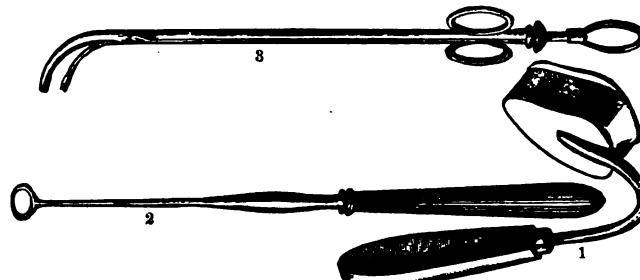


FIG. 123.—1, Curved mouth-gag ; 2, Ring-knife ; 3, Duck's-bill (Meyer).

right of the operator, should be moved in a downward direction, so that its sharp edge cuts off the vegetations at their base, the point of the finger serving as a *point d'appui* for the instrument. Whenever the left nasal passage is obstructed, the right, although not so convenient for the operator, may be utilized for the passage of the ring-knife. By gradually working from above downward and somewhat toward the sides of the pharynx, always being careful not to injure the Eustachian orifices, the adenoid growths may be entirely removed by one or more operations. The operation is not a very painful one, and can be borne by a tolerably courageous patient without anæsthesia.

During and subsequent to the ablation of these growths there will, of course, be some bleeding, but the hemorrhage is never excessive, and can be readily stopped with a cold astringent douche, by means of the post-nasal syringe. Thus far, the operation has never been followed by any other severe complication than that of inflammation of the middle ear, and this accident,

when the operator has been careful not to injure the Eustachian orifices, is unlikely to occur. There is usually some local pain and spitting of blood during twenty-four hours after the operation is completed. If thoroughly done, and followed by suitable local treatment, it usually results in a cure. The after-treatment should consist in the application of the mitigated stick (one part nitrate of silver, two parts nitrate of potash) to the seat of the former vegetations, by means of the silver probe; or, what is preferable, in my opinion, the use of the galvano-cautery. The employment of these agents should not be begun for one week after the operation, but when once started, must be repeated every five or six days, or oftener, until there is no further appearance of diseased tissue at the vault of the pharynx. The applications of the mitigated stick may be partly neutralized by an immediate spray or douche of a solution of salt upon the region cauterized.

Whenever tough growths are situated on the side-walls of the pharynx, a second operation is occasionally indicated, for which Meyer uses "a special instrument (called duck's-bill), curved like an ear catheter and shaped like a small lithotrite, but with spoon-shaped cutting ends" (Fig. 123, 3).

Personally, I have performed Meyer's operation several times in cases very similar to those in which he advocates it so strongly. I have always benefited my patients by doing it, but I have not cured them radically of their unpleasant symptoms. Perhaps, the explanation of my lack of absolute success is, either that I was not thorough enough in my operations, or that my patients did not respond well to this treatment. As a perfectly safe and legitimate operation, I can, however, honestly recommend it. That others in the United States, who shall do it after reading my description, may have at times a perfect result, I have no right to doubt. While other *cutting* operations than Meyer's have been proposed by different writers on adenoid vegetations, none inspire me with as much confidence. Further, I would insist that *every cutting* operation performed at the vault, or on the side-walls of the upper pharynx, should be guided by the finger, or the rhinoscopic mirror. Otherwise, too much, or perfectly healthy tissue, will probably be cut off, which can but be detrimental to the patient. There are many cases, however, in which, owing to obstruction in the nasal passages, by bony growths, deflection of the septum, or simple hypertrophic catarrh, Meyer's ring-knife cannot be used. There are, also, many cases, in which, by reason of great intolerance of the patient to the finger, and where the rhinoscope mirror cannot be employed to guide the direction of the cutting knife, on account of the small space between the free margin of the soft

palate and the posterior wall of the pharynx, when Thomas' or Bosworth's soft wire uterine curette, bent so as to adapt it to the parts involved, will prove very serviceable. Not having a cutting edge it may be repeatedly and forcibly scraped over the vault of the pharynx, in the median line, and a short distance to either side, until the sessile growths situated in this region are completely broken up, or disorganized (Fig. 124). In many instances I have had great satisfaction in the use of this curette,

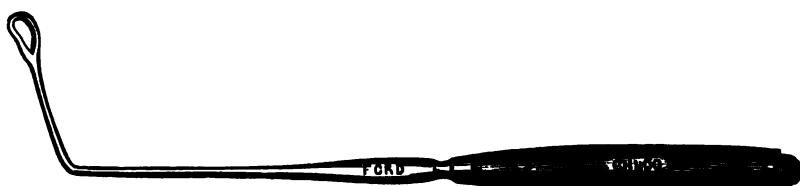


FIG. 124.—Wire Curette for use in Glandular Hypertrophy at the Vault of the Pharynx (Bosworth).

particularly when the vegetations were soft, and, on account of the facility with which it can be manipulated, believe it merits to be more commonly employed. A few days after the blunt curette has been thoroughly used it is well to apply either fused nitrate of silver, or the galvano-cautery to the remains of the adenoid growths. The sharp pharyngeal curette (Fig. 125) may occasionally be used with advantage to replace the blunt one of

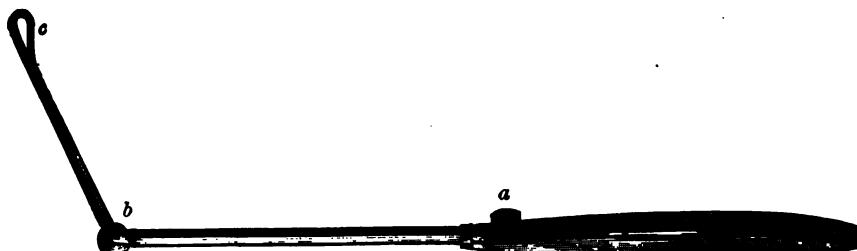


FIG. 125.—Mackenzie's Curette. "At *a* there is a button, by means of which a small rod, acting through a spiral spring, bolts the hinge at *b*, and thus fixes the cutting-loop, *c*, at the desired angle."

Thomas, when the adenoid vegetations are tough and difficult to cut through. If employed, however, it should be manipulated with care, and without much pressure, otherwise it might cut away healthy tissues, and occasion considerable and unnecessary loss of blood. In the event of the hemorrhage becoming excessive after this, or other operations in the naso-pharynx, Mackenzie's sponge tampon * will be found to be a very service-

* Instead of stitching a piece of sponge to the point of the instrument, as recommended by Mackenzie, I should prefer a bit of sheet punk, which has undoubted styptic action.

able instrument for temporary use. Of course if bleeding continues in spite of pressure by this means, we should, without too great delay, resort to plugging of the posterior nares.

Galvano-cautery.—The advantages derived from the use of this instrument, in the treatment of adenoid hypertrophy at the vault of the pharynx, have been variously estimated. By some, as Cohen and Swinburne, the necessity for its employment has never been encountered in actual practice; by others, it is considered a painful and difficult instrument to manipulate properly in this region, and therefore should never be employed in the naso-pharynx. By a few, as Lange and Fraenkel, it should not be regarded as "the chief" or "exclusive" method of combating adenoid growths. By Browne and Loewenberg, it is apparently their favorite instrument, "as less painful, more thorough,

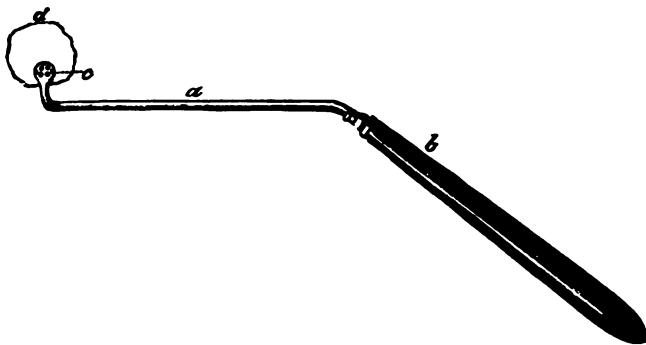


FIG. 126.—Mackenzie's Temporary Sponge-tampon for the Posterior Nares. *a*, stem; *b*, handle; *c*, holes through which the pad can be stitched to the tip; *d*, sponge.

and less likely to lead to hemorrhage than either forceps or curette." My own experience leads me to the conclusion that, in cases in which Meyer's knife cannot be used by reason of obstruction in the nasal passages, or in those cases where the patient is an adult, with a tolerant throat and a capacious naso-pharynx, the galvano-cautery can be employed with great advantage. It undoubtedly requires considerable manipulative skill, which can only be acquired by repeated operations, to obtain the best results, and avoid certain unfortunate complications. The cautery should only be used in sessile growths of moderate size; the wire écraseur of Jarvis being better adapted to operations upon pedunculated growths. Whenever the galvano-cautery is employed, it can only be applied with accuracy and without probable evil consequences, when the soft palate is drawn forward and fixed in position, either by Wales' method, already described, or by means of Swinburne's mouth-gag (Fig. 127). This latter instrument, which is a modification of Whitehead's, is

said, by its inventor, after using it in fifteen cases of adenoid vegetations of the pharyngeal vault, "to be all that is desired." The modifications consist mainly in the additions of palate-retractor, and a bar with a slot and side-bolt. The tongue-depressor or of Whitehead's gag is left out. I have not found it necessary to give ether to the adults upon whom I have operated. In unruly children I can understand that its use may be imperatively required. Except in very rare instances, I doubt the expediency of employing the galvano-cautery for adenoid growths of children in preference to the curette or snare. When the two last-mentioned instruments are used, the mouth-gag of Swinburne may be advantageously fixed in the mouth prior to the operation, so as to restrain a child, who otherwise would obstinately shut its mouth, and prevent the operator's eyes from

seeing, even in part, where the curette or the loop of the snare was carried and applied. In order to have good results with the galvano-cautery, it is very important to make use of a convenient handle, and suitable cauterizing points or spirals. The best handle with which I am familiar is that of Leiter (Fig. 84, I.), and a small size spiral about two to three lines in breadth. The stem of the instrument

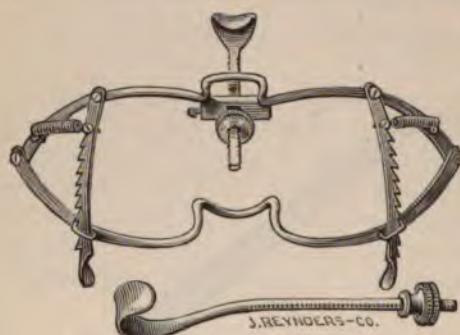


FIG. 127.—Swinburne's Mouth-gag.

will be well adapted to most cases. which unites the spiral with the handle should, of course, be of small diameter and proper curve to be introduced into the nasopharyngeal space. An instrument like Dr. R. P. Lincoln's, without the protector, considerably shorter as regards the stem, and with a somewhat smaller spiral, is the one I have frequently employed. While the protector shields the adjacent parts from being burned, in the event of a necessary effort of gagging or deglutition, a sudden movement by the patient, or a lack of skill of the operator, I have preferred to do without it, on account of its size and the fact that sight of the precise parts to which the cautery is applied is thus more or less completely prevented. It is true, that several times I have touched healthy parts momentarily with the heated platinum wire, but hitherto I have not done more than passing harm. The cold platinum spiral should be introduced behind and above the soft palate, guided by the rhinoscopic mirror. So soon as it is seen precisely where it is located, the electric current should be passed. The platinum

spiral should not be heated beyond a dull red heat, because, otherwise, it would burn too rapidly, and be apt to destroy more than we wish at a given point. The amount of heat necessary to bring the spiral to a dull red can be found out accurately by previous trials with the battery before the operation is begun. At the time of the operation, the assistant is cautioned to lower the plates of the battery only far enough into the caustic fluid to produce, as nearly as possible, the amount of heat needed, or else the quantity of fluid required to make the proper degree of temperature is put in the cells originally, so that the *plates* may be *lowered* to the bottom of the cells and allowed to remain.* We shall be obliged, in either case, however, to watch the platinum spiral closely, and not to allow it to remain more than a few moments in any particular spot. Just before we wish to withdraw the spiral, we should shut off the current by stopping pressure at the handle with the right thumb. Usually, we can take the instrument out of the mouth rapidly, and without touching the palate, fauces, tonsils, cheeks, or lips. When the patient makes a sudden effort of gagging or deglutition, or when the soft palate is not held tight enough by the elastic cords, the palate may rise up against the hot spiral, if unprotected, and be burned superficially. This, in my experience, has not resulted in the permanent injury of the patient.

The operation with the cautery is painful, it is true, but should be borne without anaesthesia. The hemorrhage is very slight if the platinum spiral is *not* allowed to become too hot. It has to be repeated on several occasions, at intervals of a week or more, in order to rid the patient entirely of growths at the vault of the pharynx. It may be followed by acute inflammation of the middle ear, which will prove more or less serious. This will not usually occur, if the operator be careful, moderately skilful, and does not attempt to burn away too much tissue at any one time, and does not cauterize immediately around the orifices of the Eustachian tubes, unless it be essential. This aural complication is avoided by plugging the anterior nares with cotton for a day or two after the operation whenever the air is cold or damp, using frequently some demulcent, or anti-inflammatory nasal spray (as that of Dobell), and instilling a few drops of solution of atropine into the ears, if they show the slightest inflammatory tendency. In case the pain in the ear continues, and evidence be afforded, by the bulging of the membrana, that there is much fluid in the tympanum, puncture of the drum should be made immediately.

* Lennox Browne writes that the only way to insure regularity of the cautery power "is to employ a rheostat to measure exactly the heat of the wire."

The constitutional symptoms of fever, vertigo, headache, and general malaise, occasioned at times by the use of the cautery, do not seem to be of sufficient importance to deter one from its use, when, to combat local conditions, it is plainly indicated.



FIG. 128.—Author's Electro-cautery. A, button upon which pressure is made when passage of current is desired; B, protector; D, insulator; E, E, wires for attachment of electrodes.

unnecessary cicatrices may be formed, which will inevitably be followed by considerable contraction.

Since writing this description, Mr. Stammers, electrician, has made for me a very serviceable cautery (Fig. 128), in which the protector (B) is made of the outer layer of asbestos, as quarried. This substance does not crack or break off easily, and is relatively a very bad conductor of heat. Though not yet as perfect as I could wish, this cautery is the most practical one now in the market for burning operations in the naso-pharynx.

Caustics.—The use of caustic agents, such as acid nitrate of mercury, potassa fusa, Vienna paste, chromic acid, chloride of zinc, is contra-indicated, because those which are sufficiently energetic in their action to destroy tissues to any depth, cannot be limited readily in their application or in their effects. In this way, structures which are healthy may be destroyed, and thus



FIG. 129.—Cohen's (Retro-nasal) Pharyngeal Cutting Forceps.

Forceps.—Sessile or pedunculated growths of moderate size may be torn away, cut through, or simply crushed by means of a forceps (Fig. 129) with a short, oblique, or rectangular and upward curve, not unlike in appearance Mackenzie's short

laryngeal forceps. In fact, the latter instrument, with cutting or serrated edges at its distal extremity, may be employed occasionally with great advantage. One of the best forms of cutting forceps for these growths is, doubtless, Loewenberg's (Fig. 130).

The accompanying figure (Fig. 131), taken from Cohen, "rep-

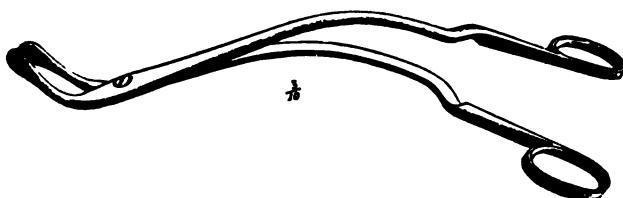


FIG. 130.—Dr. Loewenberg's Post-nasal Forceps.

resents a case in which the mass was torn off with a short laryngeal forceps and then cauterized thoroughly with nitrate of silver, giving complete relief to an unpleasant, so-called "nasal catarrh," which had existed for ten or twelve years. Whenever the forceps is used, and especially in young patients, its work can be done far more thoroughly and accurately if Swinburne's mouth-gag be introduced and fixed in position, and the patient previously be anaesthetized. All portions of the growth which can be taken hold of by the forceps should be removed. Any shreds which are found with the index-finger, after the forceps is withdrawn, can be scraped away with the nail. In two cases, operated upon after this manner by Woakes, considerable hemorrhage occurred; in one it was sufficient to call for plugging the posterior nares.

Snare-écraseur. — The most satisfactory method of removing adenoid growths at the vault of the pharynx, when they are pedunculated, and of large size—*i.e.*, as that of a bean or chestnut—is to snare them off by means of Bosworth's modification of Jarvis' wire snare-écraseur. This instrument, which has a suitable upward curve to reach the site of the disease, is introduced through the mouth, and above the free margin of the soft palate. Before introduction, however, a convenient-sized loop, in view of the previously determined mass and situation of the growth, is made with the distal extremity of the wire. This loop is now bent sharply downward on either side of the opening of the curved canula with the index-finger, so as to give it a kink or

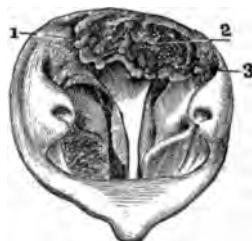


FIG. 131.—Rhino-scopic View of Glandular Hypertrophy at Vault of Pharynx. 1, enlarged glandular mass; 2, lobes studded with yellow spots, simulating concretions; 3, fossa of Rosenmüller. This case shows also, oedema of the membrane of the septum narium (Cohen).

notch. Afterward, the loop is played out about one-eighth of an inch, and then carried backward at a right angle to the curved portion of the instrument, and toward, and parallel to, the outer canula. The object in making the "notch" in the wire loop is

to render it possible for the loop
to retain its position, when bent
backward, and in the direction
of the handle of the instru-

ment, until the outer canula is pushed toward the operator by turning the milled button. During introduction the wire loop is carried up as far as possible into the naso-pharynx, and it, together with the further end of the écraseur, is pressed closely against the pharyngeal vault, and the milled button slowly turned from left to right. In a few moments, if the instrument has been well placed, the wire loop is gradually drawn into the canula, and in close contact with the surface of the pharyngeal vault, while embracing the growth, until more and more constriction, and finally complete separation of it is made. The growth itself is now, as a rule, blown out of the nostril, or is hawked down and expectorated from the mouth of the patient. In performing this operation, except occasionally with unruly children, it is not necessary to administer an anæsthetic. Neither is it usually essential with young people, or adults, to tie up the palate according to the method of Wales, or employ the mouth-gag of Swinburne. One or other of these methods of enlarging the nasopharyngeal space and affording a better view of the growths themselves, while facilitating, at times, the operative procedure, may be adopted, however, if the patient be tolerant and willing. If special difficulties also be encountered in grasping the growth, without making use of one of these methods, we may finally be compelled to resort to it, or fail to succeed after several awkward attempts. The operation is ordinarily performed in a few moments, causes very moderate pain, and is followed by but slight hemorrhage. The main difficulty in its performance arises from the intolerance of the patient's throat, which makes him gag when the instrument is any length of time in place. Occasionally, however, patients are seen who experience relatively slight incon-

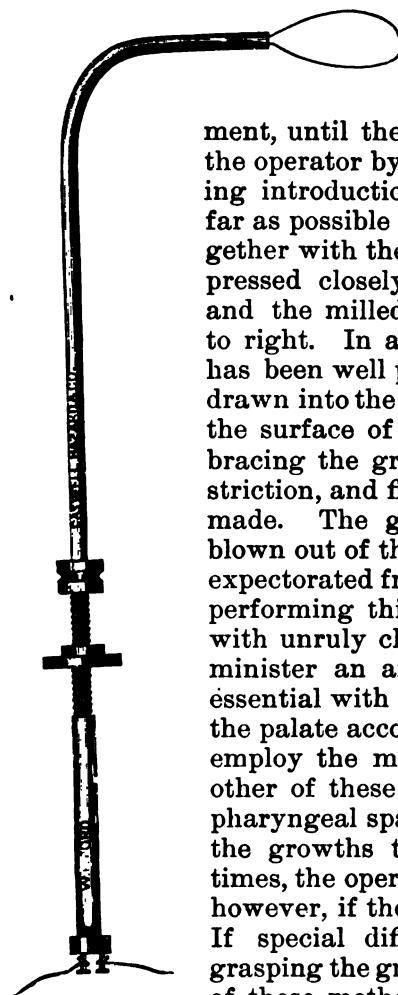


FIG. 132. — Bos-
worth's Modifica-
tion of Jarvis' Wire Snare.
écraseur.

venience, beyond a constant flow of saliva out of the mouth, from the presence of the écraseur in their upper pharynx. Subsequent to the operation, there is some sanguineous expectoration, during a few hours, and the post-nasal space is somewhat sore and uncomfortable for three or four days. The relief to nasal intonation, and a sensation of stuffiness in the nasal passages, is often absolute. Besides, in those instances in which nasal respiration has been much obstructed previously, it is at once re-established in a normal degree, and there is no further complaint of mouth-breathing or snoring at night. I have not mentioned ordinary astringents in the treatment of this disease, because in my belief they are almost valueless. Internal treatment may likewise be practically ignored by reason of its negative results.* Such growths may, it is true, in rare instances, atrophy after puberty, and for this reason, surgical interference may, perhaps, be judiciously postponed, when hearing, voice, or nasal respiration are not notably affected. If the hearing remain imperfect after removal of the vegetations, suitable treatment of the ears should be begun so soon as the naso-pharynx has healed. If this treatment be neglected, the hearing, instead of improving steadily, will, at times, gradually grow worse.

* While this is my experience, it is not that of Cohen, who puts faith in the action of hydrated chloride of calcium, given in simple syrup, and in divided doses, to the extent of thirty or more grains daily. He believes this drug exercises a specific influence upon glandular hyperplasia (Medical News, loc. cit.).

CHAPTER XIV.

GELATINOUS OR MUCOUS POLYPI OF THE NOSE.

THESE growths, otherwise termed myxomata, are very different from the dense, fibrous masses which usually originate in the naso-pharyngeal space, invade the adjacent cavities, occasion severe, repeated hemorrhages, and finally, in this manner, imperil life. The myxomata or soft nasal polypi are ordinarily discovered when they obstruct in part or entirely the nasal fossæ, and may be shown, in very many instances, to have their site of growth upon one or other of the turbinate bodies. Infrequently they begin their growth from the frontal sinus (Fig. 133) or the septum,* or are attached below the orifice of the antrum in the middle meatus (Fig. 134). Whenever they

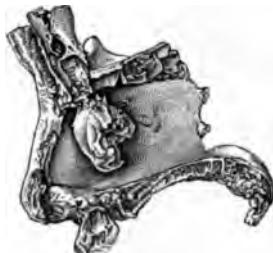


FIG. 133.—Gelatinous Polypus seen hanging down from the Frontal Sinus (Watson).

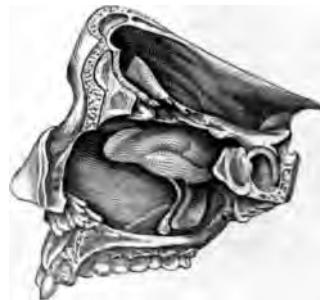


FIG. 134.—Polypus (much shrunk by long immersion in spirit) attached below the Orifice of the Antrum (Watson).

develop directly from the mucous membrane of the turbinate bodies, it is the under surface which is the seat of their predilection, and not the upper or convex one of these structures. They may take root, as it were, upon the anterior portion of one of

* According to Watson, the only recorded case of mucous polypus growing from the septum nasi is one, the specimen from which is in the museum of St. Thomas' Hospital, London. To this case, however, Mackenzie has lately added seven others, reported severally by Bryant, Leriche, Clinton Wagner, Hartmann, and Zuckerkandl. The three cases referred to by the latter author appear doubtful to Mackenzie, from the description, whether all were examples of true polypi (*vide* pp. 248, 249, loc. cit.).

these bodies, and ordinarily the middle body is their favorite site, and, slowly or rapidly, they occlude one or other anterior nares, or they may start from the posterior extremity of the turbinate tissues, and soon become evident in the naso-pharyngeal space above the soft palate (Fig. 135). Very often they obstruct the median portion of the nasal fossa, coming as they do from the middle of the turbinate body or hanging from the middle meatus. Rarely do they occur singly. Usually they are found in groups of several together, and so soon as one is torn or snared away, another will take its place. A correct idea cannot be formed, by mere examination at first of the nasal passages, as to how many polypi are present, since they are often seated deeply within the numerous cavities connected with the nasal fossæ, or are pressed in under the turbinate bones and against the outer walls of these passages in such a way that they are wholly concealed from view until the more evident ones have been removed. Nor can we usually judge, by the outward conformation of the nose, how many of the myxomata may be shut up within the nasal cavities, since they do not, except in rare instances, change the outline of this organ. As exceptions to this rule, I would mention a patient whom I examined early in October of last year, and who was operated upon by Dr. R. F. Weir at the New York Hospital a few days later (October 11, 1884). In this case *decided bulging of the nasal parietes* was present, and was evidently caused by pressure from a very large mucous polypus, which completely occluded both nasal fossæ.



FIG. 135.—Gelatinous Polypi springing from the Middle Turbinate Bone (Bosworth).

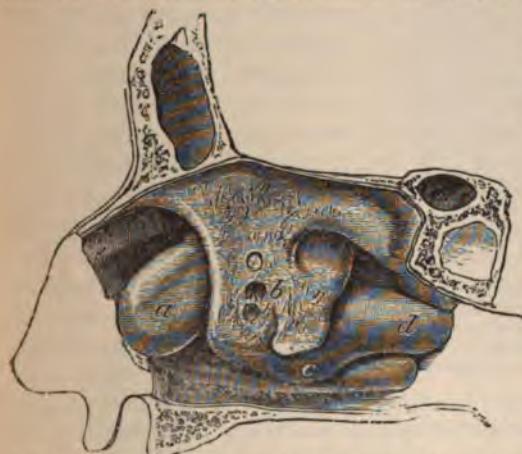


FIG. 136.—*a*, Polypus hanging from the middle meatus; *b*, apron-like flap hanging from the vault of the nose and upper turbinate body, and partly covering *d*, the middle turbinate body, which is greatly thickened; *c*, portion of middle projecting over the lower turbinate body. Near *b* are three small abrasions, possibly caused by the pressure of the inner wall (MacKenzie).

tober of last year, and who was operated upon by Dr. R. F. Weir at the New York Hospital a few days later (October 11, 1884). In this case *decided bulging of the nasal parietes* was present, and was evidently caused by pressure from a very large mucous polypus, which completely occluded both nasal fossæ.

This lateral expansion of the nasal bones and cartilages, accompanied by considerable thickening of their structures, has, also, been observed as a consequence of the long continuance of gelatinous polypi by Sir William Ferguson, and remarked upon by him as being an extremely rare condition.* According to Watson, the bones and cartilages, under these circumstances, are, as a rule, "very much thinned as well as expanded."

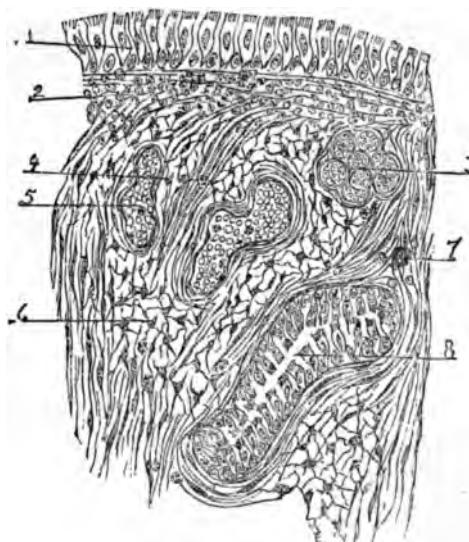
This is due, unquestionably, to their soft structure, which allows them to be much compressed into different shapes and sizes, before they exercise sufficient pressure themselves against the surrounding parts to change their outward appearance.

The form and aspect of the gelatinous polypus is not unlike the pulp of a grape or a muscle, being somewhat oblong and attached to their point of origin by a narrow neck or pedicle. Properly speaking, they have no "roots," unless we apply this term to the site where the pedicle is confounded with the mucous membrane of the nose. All gelatinous polypi are not pedunculated. Those which are young, or small in size, are generally sessile. When, however, the polypi become larger,

FIG. 137.—Section of Mucous Polypi $\times 300$ (Seiler). 1, epithelial layer; 2, infiltrated submucous layer; 3, mucous gland; 4, fibrous band; 5, venous sinus filled with blood; 6, myxomatous tissue; 7, transverse section of arteriole; 8, invagination of mucous membrane.

have acquired more space to expand (as they have when they protrude into the post-nasal space or descend into the lower meatus), and have already been in existence a long period, they are prone to become narrowed or stretched near their site of attachment, so as to form a kind of neck to their pear-shaped bodies. Their aspect is that of a jelly-like substance; sometimes of a decided yellow color, occasionally with a tinge of gray, and again showing by their light red surface, especially near the pedicle, the evidence of notable vascularization. Their structure is of the simplest kind. It consists mainly of some loosely intertwined fibres of connective tissue with enclosed rare

* Medical Times and Gazette, October 19, 1867. Watson, Diseases of the Nose, p. 71.



glandular and epithelial elements, the whole containing or mingled with a large amount of mucin, which is, indeed, the most considerable portion of each separate mass (Fig. 137).

The polypus itself is limited, or surrounded by, a thin cyst-wall of cellular tissue, covered with ciliated pavement or columnar epithelium, which is a prolongation from the mucous membrane, and which prevents its contents from becoming disseminated or falling into the meatuses of the nose. The submucous layer underlying the polypi is generally much infiltrated. Besides the gelatinous form of polypus, which consists essentially in the hyperplasia of a normal simple tissue, there is another and more complex variety, according to Watson,* in which the mucous glands of the part are very much multiplied and hypertrophied, in addition to a great increase in the submucous areolar tissue. Rarely the simple mucous polypus is cystiform or divided into distinct areolar spaces.

Whenever the polypi have been removed and recurred several times, they are apt to lose their semi-transparent appearance and to become of an opaque white hue. This white color is due to the organization of the fine molecular or fibrous matrix in which the ordinary mucous corpuscles are imbedded. Indeed, these latter form the nuclei of the fusiform fibres into which the matrix is readily separable. The diameter of the separate fibres is only a little more than that of the enclosed nuclei, and by their attenuated extremities they extend, at times, almost imperceptibly, into structureless homogeneous membrane. Billroth, in his "Surgical Pathology and Therapeutics,"† reports a third variety of polypus, which appears at first under the form of small papillomata or soft warts. Such cases are extremely rare, unless indeed, as Watson says, "the early stage of the ordinary polypus appears under this form."

Gelatinous polypi are relatively rare in childhood and adolescence, and the very few cases met with under the age of fifteen years do not seriously conflict with this statement. Within a very brief period, however, it has been my fortune to see a little boy, only three years old, affected with a growth of this nature. This child was operated on successfully by Dr. S. F. Morris, under ether, by evulsion with an artery-clamp forceps (Sabine's), at the Out-patient Department of the New York Hospital, December 19, 1884. The patient had apparently a strumous habit, and was evidently a sufferer from chronic hypertrophic rhinitis. This case is the more remarkable, inasmuch as Dr. Morell MacKenzie,‡ in his very extensive experience, writes that "the

* Loc. cit., p. 69.

† Page 616.

‡ Loc. cit., p. 247.

youngest patient he has met with was a girl aged sixteen, the youngest boy having been seventeen." * Moreover, it contradicts, in some infrequent cases at least, the statement of Wagner,† that "foreign bodies are almost invariably—I may say without exception—found in subjects younger than those in whom polypi have ever been known to develop." Toward middle life gelatinous polypi become more frequent. They are nearly equally divided between males and females, with a preponderance, however, in favor of the former.

When removed, particularly by the method of evulsion with the forceps, they are liable obstinately to recur, and with each recurrence they seem to grow in size and number, and consequently to obstruct, more and more, the nasal passages.

They are usually multiple. As they grow larger they are apt to lose their pyriform shape and to become moulded by the resisting walls which surround them on every side. According to the later researches of Zuckerkandl, it appears that mucous polypi do not change their shape during their development, but always retain the form they had primitively, whether it be globular or oval. The size of polypi varies from that of a small seed to a grape or chestnut. In a few rare instances they have a very remarkable size, like that in one of Mackenzie's cases, in which the polypus was five inches in length, with a correspondingly broad base; or, in the patient of Stoerk's, where the polypus reached from the posterior nares down to the laryngeal opening.

It is difficult in some cases to assign a cause for the origin and development of gelatinous polypi in the nasal passages; in others, they would appear to be due, most probably, to a preceding catarrhal inflammation of the pituitary membrane. No underlying dyscrasia, of specific or other nature, has any apparent influence in their production. They seem to originate in some of the glands contained in the structure of the mucous membrane. While a chronic hypertrophic catarrh is the most efficient cause in producing them, yet many times they are discovered in patients who, at no time previously, have suffered from this form of ailment. Rarely do they show themselves in those persons who are affected with atrophic catarrh.

The *symptoms* and *complications* which accompany the presence of these growths are often in direct relationship with their increase in size and number, but ordinarily they are such as to

* In the Journal of the American Medical Association, vol. iii., No. 8, August 23, 1884, p. 212, E. Fletcher Ingals (Chicago) reports a case of nasal polypus occurring in a patient thirteen years of age.

† Loc. cit., p. 120.

make one suspect their existence. An individual thus affected will complain of more or less continuous nasal obstruction. This obstruction varies, it is true, in amount. In damp or rainy weather, the nose is so much blocked up, owing to their power to absorb moisture, or the hygroscopic nature of the polypi, that nasal respiration is almost impossible. When, however, the atmosphere clears, nasal respiration again becomes possible, and the polypi diminish, notably, in bulk. The obstruction, at first, is confined to one side. Shortly, however, the polypi develop on the other side, and after the lapse of a few months, a year, or more, both sides are about equally implicated. Inspiration is, in the beginning, much freer than expiration, as during this act the polypi are drawn outward and upward, and become lodged in the outer portion of the choanæ, or fall back into the maxillary sinus, or some other sinus communicating with the nasal passages.

This stage does not last long, and ultimately the nasal fossæ are obstructed in an equal degree in inspiration and expiration. There is more or less constant and abundant mucous discharge from the anterior nares, and when this discharge is marked, the patients breathe more freely, and suffer less from weight and pain in the forehead, and in the orbits. Cephalgia is not infrequently a distressing symptom, and one which cannot be permanently relieved as a rule, until the polypi are removed by a surgical procedure. Attacks, repeated and violent, of sneezing are very characteristic, and of themselves should direct attention to the condition of the nose, and make one suspect the existence of these growths. In acute rhinitis, as is well known, we have frequent, repeated sneezing, but in chronic hypertrophic rhinitis, this symptom is not often met with, unless this condition be complicated with the presence of polypi. Of course, there is no difficulty in making a differential diagnosis between an acute inflammation of the pituitary membrane and this kind of nasal tumor. The suspicion of a polypus is justified frequently by the results obtained from direct examination of the nasal organ. Owing to the presence of polypi, the olfactory sense is obtunded and the aroma of many well-known and familiar viands and liquids cannot be determined. Even extremely pungent substances remain unrecognized, at times, and only reveal their near presence by the real pain they occasion when their application is too much prolonged. Aural phenomena not infrequently are occasioned by the presence of these polypi. On one occasion, in my experience, the drum membrane was perforated on one side, and the hearing power of the affected ear almost lost.

On several other occasions the patient suffered from tinnitus

aurium and impaired audition. I have seen, however, more than one patient in whom the nose was considerably blocked up, and who confessed to no uneasy or painful sensations which had their seat in the ears.* Nasal intonation of the voice always accompanies these growths, when they are of large size or quite numerous. This symptom is simply a phenomenon due to obstruction, which may be more or less complete. Owing to blocking up of the nasal duct by direct pressure of the polypus, or by extension of the accompanying catarrhal inflammation, the tears do not flow away readily, there may be epiphora, and the conjunctivæ are often red and inflamed. The eyesight may, in time, become weakened, and the patient be unable to use them as long as he had been accustomed, without causing fatigue, pain, and a watery condition. The flow of nasal mucus is often quite acrid in character, and produces irritation with swelling of the upper lip.

Attacks of asthma are not infrequently occasioned by the presence of nasal polypi. When the polypi are removed, usually, the periodic distress in breathing will disappear.† This, however, is not always true, and I have known one case, that of a distinguished colleague in a neighboring city, in whom, even after the radical extirpation of the polypi, iodide of potash and other remedies had to be resorted to in order to prevent or diminish the severity of the attacks. In a similar case, however, we should not lose sight of the familiar Latin dictum, "*Post hoc, ergo non propter hoc*," and recognize a coincidence, perhaps, rather than a direct consequence.

Attention was first directed to this distressing complication of mucous polypi, by Voltolini, thirteen years ago (1872), but since that time it has been recognized generally, through numerous recorded observations from different authors, to be a not uncommon occurrence.‡ When the nasal speculum is employed, the polypi are detected, obstructing, more or less completely, the nasal passages. Sometimes they can be readily distinguished from the turbinated bodies by their pale yellow color, and their glistening, shining appearance. Occasionally this statement is

* Woakes explains some of these cases by stating that nasal polypi "seldom intrude into the inferior channel of the nose, which is the true auditory passage."

† Fall von schwerem Asthma im Folge von Nasenpolypen. Vollständige Heilung. Wiener Med. Presse, 1884, No. 24.

‡ Cases of reflex cough, caused by the presence of nasal polypi, have been observed. The cough excitation depends, usually, upon the position of the growth which, must spring from, or be brought in contact with, a portion of the erectile area, and generally its posterior portion. In these cases, the *subjective symptoms referable to the larynx*, have disappeared upon removal of the polypus. (See paper by Dr. John N. Mackenzie, in *Transactions of the Medical and Chirurgical Faculty of Maryland*, 1884.)

incorrect, for their color is decidedly red, owing to extreme vascularity of their cellular sac, and, unless exploration with the probe be carefully made, the physician would remain in doubt as to whether or not a polypus was present. By pressing the probe gently upon a similar growth, it gives way, or disappears without any great degree of resistance being felt. This, of course, would not be true if we had to do with a hypertrophied turbinated body. Now and then, by pushing the polypus aside, and endeavoring carefully to find out where, precisely, it has taken its point of implantation, or attachment, this can be discovered. If, however, the polypus is situated high or far back in the nasal passages, this latter research will probably afford only a negative result.*

Whenever the gelatinous structure of the polypus has changed in a certain degree, as, for example, when it has taken upon itself a more fibroid condition, or when it has become more vascular, this transformation will be revealed by the appearance of the growth, or by the resistance offered to the use of the probe in making researches as to their precise nature, size, number, location, etc. Certain polypi cannot be seen by anterior rhinoscopy.† The small mirror must be employed before we can bring them into view, and then they are discovered to hang from the posterior nares, to rest upon the upper surface of the soft palate, and possibly to appear in the bucco-pharynx.

Diagnosis.—This is usually easy, as no other growth presents the same appearances as a polypus. Occasionally, however, it has been confounded with—

1. *Carcinomatous or sarcomatous growths*, from which it may be distinguished by the facts that these tumors are harder, more prone to ulcerate, to become the seat of severe pains, and to cause considerable deformity of the nasal passages.

2. *Bony growths*. From these it may be differentiated by the great density and hardness of the former.

3. *Deviated septum*. In this case the tumor springs invariably from the dividing wall of the nasal fossæ, and while there is a projection into one nasal passage, there is frequently a corresponding depression in the opposite chamber.

4. *Abscess, or blood-tumor of the septum*. In these latter cases there is nearly always the history of some injury, more or less severe, within a short time, which has been followed by pain and swelling inside the nose, and accompanied by slight

* See what I have said, under Treatment of Polypi, of the late local use of cocaine, in these and analogous cases, both as a means of diagnosis and an aid to treatment.

† This statement will probably remain correct, although in a fewer number of cases than previous to the use of cocaine in nasal diseases.

febrile movement. On direct examination, moreover, the tumor is bilateral, projecting into both nasal passages, and indistinct fluctuation may soon be felt, the cause of which can be determined by an exploration, puncture, or incision.

5. *A fibrous growth.* This may be distinguished by its difference of color, which is usually deeper ; by its greater firmness ; by its seat of origin, which is usually the naso-pharyngeal space ; by the frequency and profuseness of the epistaxis, which comes on spontaneously, or from the gentlest manipulations, and from the extensions of the tumor and the consequent considerable deformities occasioned by its presence and by its rapid growth in all directions.

6. *Hypertrophy of the turbinated bodies.* The differential diagnosis is ordinarily made without difficulty, if the following points are observed : A mucous polypus is of pale, semi-transparent color ; the hypertrophy of the turbinated body is more or less deep red, with an angry, inflamed aspect. The polypus may be moved easily, as a mass, whereas the turbinated body cannot. The former is usually pedunculated, the latter is not. The polypi are rarely so symmetrically situated in the two nasal passages as hypertrophied turbinated bodies are ; still, confusion is sometimes made, owing to the fact that a mucous polypus may become pink, vascular, and tolerably firm, and a hypertrophied turbinated body is at times somewhat ensanguinated, quite soft, and hangs from the turbinated bone itself by a stretched piece of pituitary membrane, which offers a tolerably close resemblance to the pedicle of a gelatinous polypus. As the latter is the most frequent and important diagnosis to make, and as few text-books lay any stress upon it, it is well carefully to note the points of differential diagnosis upon which we shall be obliged, in the majority of cases, to rely.

As to the differential diagnosis of mucous polypus with rare forms of ethmoidal disease, or brain tumor, this, it seems to me, is extending our inquiry beyond what is required.

The *prognosis* of these cases is not grave in regard to *duration* of life. Never do these growths lead directly to a fatal termination, nor, indeed, can it be often said that they shorten materially one's existence or incapacitate one for many of the duties of life. They are, however, undoubted sources of great discomfort and annoyance, and obtund and occasionally destroy one or more of the special senses—taste, smell, and hearing. They may occasion various, and more or less serious reflex phenomena, some of which have already been mentioned. They may likewise be frequently attended by attacks of epistaxis, which are usually more troublesome than dangerous, since they are quickly arrested by the application of cold, astringents, or

other simple means. Where the bleeding from the nose is prolonged and profuse, and resists all usual methods to stop it, we should examine the nasal passages more than once, with a view to the recognition of a fibrous tumor. Among the features of this disease, which render its prognosis unfavorable, are its indefinite duration and the frequency and rapidity of the return of the growths, even when their eradication has been seemingly complete. This depends, doubtless, upon the fact that after the larger tumors have been removed, the smaller ones, which previously had not sufficient place for development, commence immediately to increase in size. Soon the nasal passages are as much obstructed as ever, and another operation for their removal becomes imperative on account of the patient's distress. A few cases are reported, which show the possibility of spontaneous expulsion of polypi. Whenever this expulsion has occurred, the prognosis has not been appreciably modified, for the reason that numerous growths remain behind in the nasal fossæ, and the one which has come away, as a result of pressure by the others, scarcely or at all improves nasal respiration. In the instances in which it has been said that the polypus sloughed away, this process, together with the previous symptoms of disease, have cast legitimate doubts upon the accuracy of the diagnosis.

Treatment.—This may be medical or surgical. In the former is included the use of various kinds of astringent sprays and powders, as well as the employment of solid or liquid caustic applications, which at different times have been lauded as possessing a real power in arresting the development of, or in destroying these growths. The powder which has had the most notoriety during the past few years, in their treatment, is that of tannin, which is claimed by Mr. Bryant, of London, to destroy, at times, even very large mucous polypi. It does not, however, always succeed against large polypi, but is invariably of great value in destroying the smaller growths, and thus in arresting the progress of the disease.*

Mr. Bryant employs a small, bent glass tube, with which the patient can blow powdered tannin into his own nose (Fig. 138). In the upper half of this tube there is a receptacle for the tannin, and the end nearest to it is placed in the nose, while the other extremity is inserted into the mouth, and the patient blows the powder into his nostril. Although I have used powdered tannin in several

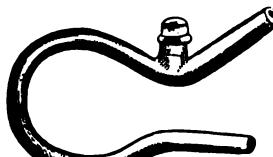


FIG. 138.—Bryant's Nasal Powder-blower.

* Bryant, *Practice of Surgery*, p. 552.

cases, in repeated daily insufflations, both before, during, and subsequent to other methods of treatment, I have never noticed that it produced any decided curative effects. Nor does it, in my opinion, prevent recurrence of mucous polypi. The best result we should expect from its employment is to give temporary relief to obstruction of the nasal fossæ, by reason of its astringency. Owing to this property, it makes the polypi contract or shrivel temporarily, and thus, when they become smaller for a short time, nasal respiration is freer. When too frequently used, or, indeed, with some patients, when used at all, in a state of purity, unmodified by mixture with some mild or inert powder, tannin is objectionable, because it occasions extreme dryness of the nasal passages.

A method which is, perhaps, more surgical than medical, is employed by Dr. F. Donaldson, of Baltimore. This consists in the destruction of nasal polypi by chromic acid.* Dr. Donaldson proceeds as follows: He first paints the adjacent mucous membrane with a solution of lead, in order to prevent any irritative effects of the acid upon healthy tissues in the event of its coming accidentally into contact with them. He then takes a thin, pointed glass rod, the end of which he covers lightly with the paste of chromic acid (100 grs.— $\frac{5}{6}$ i.). After introducing this point directly into the growth, he turns it around so as to wipe off all the acid inside of the polypus. In a very short time, the polypus shows the effect of the acid by shrivelling up considerably. The action of chromic acid is that of a highly destructive, or oxidizing agent. It has great affinity for organic matter, and is a prompt solvent of it, coagulates albumen very rapidly, and parts with a large proportion of its oxygen almost immediately, and thus reduces itself to the inert sesquioxide of chromium. Chromic acid is, besides, a powerful antiseptic and disinfecting agent. It is perfectly under control, and can be applied with little or no risk to neighboring healthy tissues. Dr. Donaldson does not claim for chromic acid that it destroys nasal polypi to such an extent, that it obviates the necessity of employing the strictly surgical methods. He merely affirms, that it destroys the substance of the growth, so that it is more readily taken hold of with the forceps, or snare, and that when applied to its site of attachment, after removal, it prevents its re-formation more certainly than any other substance. Other caustics have been employed with more or less success by different practitioners. Among these we should mention nitric and acetic acid, Vienna paste, chloride of zinc, etc. When acetic acid has been injected into the polypi, it has, without doubt, occasioned the

* Archives of Laryngology, vol. iv., No. 3, p. 175.

sloughing after the lapse of several days. During this time, however, the patient has been a sufferer from a fetid nasal odor and discharge. Further, the acid could not always be employed without touching the healthy adjacent pituitary membrane, and then it was the source of considerable pain and irritation.

In one instance, latterly, I relieved a patient very much by repeated daily applications of the tincture of the chloride of iron directly to the polypi, by means of Bosworth's flattened nasal applicator. This patient had been a great sufferer from polypi, which completely occluded both nasal passages. His ears were already involved, and he complained of tinnitus and defective hearing. His olfactory sense was considerably impaired, and he had quite severe and constant headache. Already I had made use of the forceps and snare on several occasions with ordinary success, when, by reason of the repeated and rapid return of the polypi in the nasal fossæ, I determined to try the iron tincture in the manner described. The result accomplished by it, although not as perfect as I desired, was certainly more satisfactory than I could fairly anticipate. The iron destroyed completely the vitality of several of the growths, particularly those growing low down in the nasal passages, where I could with very slight difficulty touch them thoroughly around their points of attachment. In two weeks from the time I first began these applications, my patient had blown out a number of shrivelled growths from his nose, and stated subsequently, that all his unpleasant symptoms had been more relieved than by the previous methods of treatment. His ears, after a few inflations by Politzer's method, gave him no further annoyance, his sense of smell returned in great degree; his headache disappeared, and although his nasal passages were still partially obstructed by polypi, which I could not lay hold of, he breathed more comfortably than he had done during the two previous years. The pain of the applications was endurable, and the soreness occasioned by them was never very great. I do not, of course, know what the value of this treatment may prove to be, but I am inclined to the belief, from the effects carefully observed, in the case just reported, which was a very aggravated one, that it deserves to be made known to other practitioners.

In a case reported by G. Troupe Maxwell,* a complete success was obtained in removing a very large nasal polypus, attached to the inferior turbinate body of the left nasal passage, by means of *injections* of tincture of the chloride of iron, reduced one-half with water, into the affected fossa. During the

* *New York Medical Record*, October 1, 1868.

treatment the patient did not complain of pain, fetid odor, or other distressing symptoms.

Of the strictly surgical procedures, there are three which have met with more or less acceptance, on account of the good results obtained by them. These are :

I. *Evulsion with forceps.*

II. *Abscision.*

III. *Electric cautery.*

Before speaking of these methods separately, I would state that the objects to be attained by any perfect procedure should be : 1, rapidity and facility of execution ; 2, radical extirpation ; 3, causation of slight pain or hemorrhage.

NOTE.—Dr. Bosworth * has very lately employed applications of a two per cent. solution of cocaine with the happiest results in the treatment of several nasal affections. *Previous to* an operation for *nasal polypus*, by causing the venous sinuses of the nasal mucous membrane to contract rapidly, it facilitates greatly the view of the parts involved, and renders the operation itself almost *bloodless*. Indeed, by the use of this agent, the precise attachments of polypi which previously could not be recognized were made evident. Since Bosworth's first trials with cocaine in the treatment of various nasal diseases, it has been frequently used by myself and others, in the nose and throat, with more or less uniform success. I am now using a four per cent. solution of cocaine, and am inclined to believe, owing to the latest news received from abroad,† that in some instances a twenty or even a thirty per cent. solution (alcoholic) may be employed with advantage.‡ The precise limits of safety, in regard to local use or internal exhibition of this drug, are not yet determined. The difficulty of procuring it, and its great price, have, hitherto, prevented very extensive investigations with it, and in that way retarded final conclusions with respect to proper dosage.

The methods, to which I have referred, fulfil, in part, these

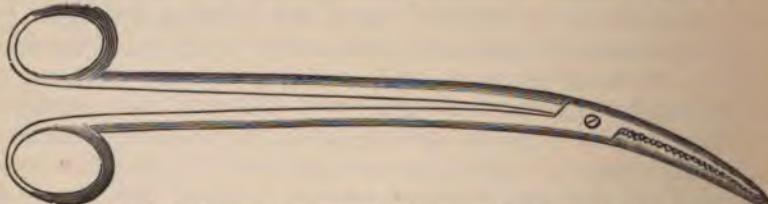


FIG. 139.—Polypus Forceps with Narrow and Tapering Blades.

indications, but all, unfortunately, have some features which render them, to a certain degree, objectionable.

I. *Evulsion* of mucous polypi by means of a suitable forceps with narrow tapering blades (Fig. 139) is the procedure which has been longest known and most widely employed. It is still the one, also, that is mentioned and recommended most frequently, by the text-books on surgery. In its favor may be urged the ease and celerity with which the operation can be

* New York Medical Record, November 15, 1884, p. 533.

† Jelenek, Wiener medizinische Wochenschrift, No. 45, 1884.

‡ In nasal operations, however, Sajous has noticed that the anaesthetic effect of a ten per cent. solution is no greater than that of a four per cent. solution.

performed. By some surgeons, also, it is lauded as being most effective, and when thoroughly done, it is said that recurrence of the growths will but rarely take place. The objections to this operation are several and important. It is extremely painful. It causes considerable loss of blood. While, occasionally, a polypus may be completely torn away, and with it the entire pedicle, generally the mass of the polypus is crushed and torn in our attempt to extract it, and the neck by which it hangs from the pituitary membrane is left behind. Moreover, it is often impossible, despite the most careful preliminary examination, either to see or to catch hold of the precise portion by which the growth is attached to the mucous membrane.* According to my experience the operation must be repeated several times, at shorter or longer intervals, and is rarely radical at first. Usually, the relief resulting from the first or even a subsequent operation, although often very great during some weeks or months after its performance, is not permanent; sooner or later the polypi will surely recur, if this method alone be pursued.† If, however, after *evulsion* with the forceps, the portions



FIG. 140.—Seiler's Tube-forceps.

of the polypus still adherent be thoroughly cauterized by some suitable chemical agent, such as strong tincture of iron, chromic or nitric acid, the probability of recurrence is much lessened.

Despite the foregoing drawbacks, I would advise that the operation of evulsion by means of the ordinary polypus forceps be still retained *in country practice* where the practitioner lacks the necessary skill or appliances for the employment of other methods—and for patients possessed of a moderate degree of fortitude. Whenever great difficulty is experienced in introducing the ordinary polypus forceps so as to take hold of a growth situated high up between the turbinated bones, the universal laryngeal forceps of Seiler (Fig. 140) may be advantageously employed, as it may be easily bent to the required curve, and the blade opened in a much narrower space, thus rendering it feasible to seize the polypus at or near the pedicle.

* It is now probable, that in cocaine we possess a remedy whose local action will make all such examinations more complete and satisfactory than heretofore.

† In the only case of recurrence alluded to by Bosworth (*loc. cit.*) the forceps was the instrument employed.

II. *Abscission*.—This method has never been popular. Why, it is perhaps difficult precisely to state. Judging other physicians from my own stand-point, however, I should say it was mainly because, after the first cut is made, all further operative procedure must, of necessity, be executed blindly, since the flow of blood will make it impossible to see accurately what is done.



FIG. 141.—Woakes' Scissors for Middle Turbinated Bone.

If, however, the operation be determined upon, the simplest way of performing it is by means of a pair of light curved scissors (Fig. 141).

For this purpose, also, scissors serrated on the edges, and not too bulky, have been especially made. Dr. Morell Mackenzie has had an instrument (Fig. 142) constructed for his use, in which one blade of fine, hollow forceps has toothed edges, the other

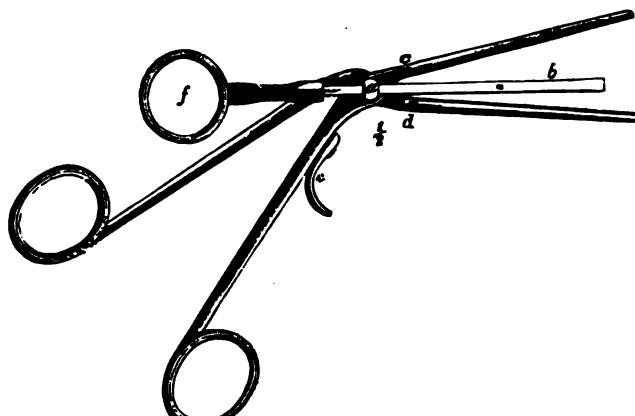


FIG. 142.—Mackenzie's Nasal Bone-forceps. *a*, central pivot, through the perforated extremity of which slides *b*, connected with the handle, *f*; *c*, upper, and *d*, lower blade of the forceps; *e*, rest for the operator's right forefinger.

one smooth edges. Between the two blades, a third sharp cutting blade is so arranged that it can be rammed down, when the proper amount of bone is seized, and all the structure it encounters is completely severed. Such forceps are particularly adapted to cases in which, by reason of the rapid and repeated return of the polypi, and despite the use of the ordinary polypus forceps, followed or not by cauterization at the base of the growths,

it is rendered essential to remove a portion of the affected turbinated bone. The instances in which the removal of a portion of one of the turbinated bones is indicated are not frequent. If, however, this operation be performed, no evil consequences are likely to follow, and, indeed, according to Mackenzie, it is "perfectly harmless." This distinguished specialist usually removes polypi, at the present time, with his long, slender punch-forceps (Fig. 144), "which is so slender that it can be easily passed along the nasal passages without obstructing the view of the operator, yet so strong that it readily cuts through the pedicle of any polypus."* On alternate days, with the use of this instrument, the electric cautery may be employed, bearing in mind, however, to commence treatment with the cautery, and under these circumstances "the latter being only employed for taking away the dead tissue."

The procedure of abscission is open to almost similar objections, although not to the same degree, as the removal of polypi by evulsion with the forceps. These are : 1,

- the pain occasioned ;
- 2, the hemorrhage ;
- 3, the incomplete eradication. The pain and loss of blood are, it is true, not very severe, and the last objection should be made especially with respect to those polypi which are situated in such a manner as to be beyond the range of its applicability.

Under the head of *abscission*, we should place the method of removal by means of the snare écraseur of Jarvis or Sajous.

According to Bosworth, this means has been employed by him in thirty-five (35) cases with complete success in all but one. In only a single instance was there recurrence of the polypi. For



FIG. 143.—Polypus with Ossaceous Lamina Removed with the Nasal Bone-forceps (Mackenzie).

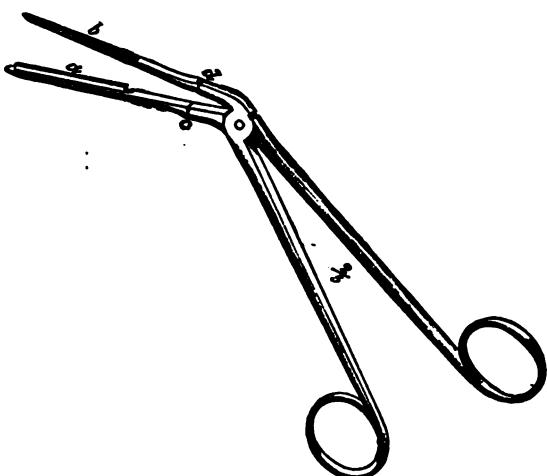


FIG. 144.—Mackenzie's Punch-forceps. *a*, small ridge or "punch," fitting when the blades are approximated, into *b*, a *fenestra* in the corresponding portion of the other blade; *d* and *c*, joints where the male and female blades can be removed and their position reversed, or, if desired, different kinds of blades may be substituted.

my own part, it is likewise the procedure I would recommend in the majority of cases. The pain it causes is so slight that it can be borne without flinching by an individual who has a moderate power of self-control. When the polypus is cut through, but little hemorrhage follows. Indeed, on many occasions, there is no loss of blood beyond a few drops. Frequently, by reason of the elasticity of the loop of piano-wire, which enables it to retain its original shape after overcoming the obstacles to its introduction, and when pressure is made steadily and gently against the mucous membrane of the outer wall of the nasal fossa after the polypus is enclosed within the loop, the pedicle of the polypus can be cut through close to its site of implantation. According to my experience, however, the sight of the pedicle, until after removal of the polypus, is extremely rare. This opinion is shared by Bosworth.* Of course, whenever the polypi are situated high up or posteriorly, within

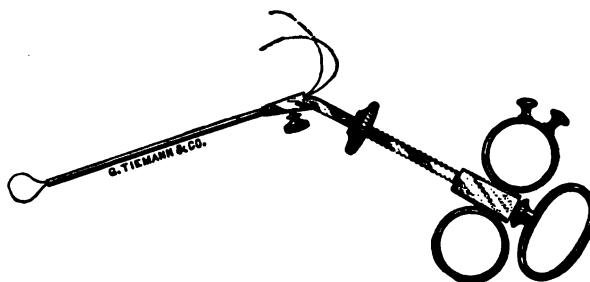


FIG. 145.—Bosworth's Polypus Snare.

the fossæ, it may require many repeated trials and considerable manual dexterity before the growth is fairly caught by the snare. In the use of Jarvis' snare, owing to its being a straight tube, the eye cannot always follow the loop while it is encircling the polypus. To obviate this difficulty, Bosworth has devised an instrument (Fig. 145) in which the handle is turned to one side.

Besides, in his instrument, it should be remarked that he has introduced a useful combination of Wilde's and Jarvis' snare by means of which "the loop can be drawn up by traction with the fingers until the pedicle is embraced, when the removal is completed by turning the screw." The form of instrument preferred by Mr. Bryant is represented in the drawing (Fig. 146), as well as the method of removal of a polypus with the wire loop. When the snare is used, many repeated applications can usually be made at a single sitting, and the only reason for stopping the operation is the fact that no more growths are present, or be-

* The local use of cocaine, as previously stated, makes this statement less true than a few months ago.

cause those which still remain are situated so as to make it impossible to encircle them with the snare. Occasionally, however, by several introductions of the snare on the same day, the nasal fossæ are much irritated, and, the patient's fortitude becoming exhausted, he pleads earnestly for temporary cessation in our attempts to relieve him.

Whenever the polypus is situated far back in the nasal fossæ, it should be removed after a method not unlike the one we should employ for the removal of posterior hypertrophies of the turbinate bodies. Occasionally, when a large polypus presents through the posterior nares and hangs down into the pharynx, it is necessary, as a preliminary measure, to pass a silk thread

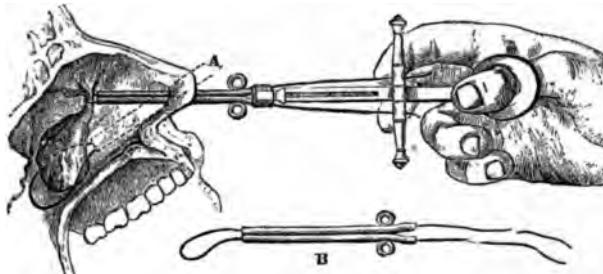


FIG. 146.—Removal of Polypus by Noose (Bryant).

through the nares by means of Bellocque's sound. The nasal end of the thread is then attached to the wire loop of the snare, and by pulling upon the other end of the thread, the loop is drawn into the pharynx, where it is slipped over the polypus with the aid of the operator's fingers, and afterward drawn back



FIG. 147.—Corkscrew-shaped Tractor (Watson).

tightly into the nasal fossa, until it cuts through the pedicle of the polypus.* For greater security against the tumor falling into the pharynx after removal, a ligature may be passed through its pharyngeal end, or it may be seized with the corkscrew-shaped tractor (Fig. 147) or a pair of suitably curved forceps.

When the operation with the snare is completed, on each occasion, and after thoroughly cleansing the nasal fossæ, either by blowing the nose forcibly, or by washing it out with warm saline solution or carbolized water, it is judicious to insufflate powdered tannin or touch the base of the growths with a chemical caustic agent, or the electro-cautery bulb. If this be done accurately and carefully, the growths are not likely to recur.

* A procedure similar to the one just described may be employed for fibroid growths situated in the naso-pharynx. In these cases, however, the wire loop is platina and not steel, and is attached by its two ends to an electro-cautery handle.

III. *Electric cautery.*—In the great majority of cases the electric cautery, either when used in the form of the incandescent wire, as a flat knife, or in the shape of a bulb, has no advantage over the cold wire. Usually, it is more expensive and troublesome to manipulate, and, unless very carefully and intelligently employed, may burn adjacent healthy parts, or even occasion erysipelas, or serious aural complications. When, however, many of the growths have been removed by Jarvis' or Sajous' snare, and the others are beyond reach, while the nasal respiration remains much obstructed, partly owing to the polypi which are left behind, partly on account of the swollen and hypertrophied condition of the pituitary membrane, it is indicated to make quite an extensive application of the cautery. My preference for it rather than to make use of any kind of chemical caustic, especially in obstinate cases, is very decided. I believe, indeed, that it removes more certainly any remains of morbid growths, and renders their recurrence less likely, than by resorting to any other known method. I do not lose sight, in making this statement, of the drawbacks that I have mentioned. Still I hold that the risk of its application should be incurred, when other procedures are insufficient. These risks will be reduced to a minimum if care and good judgment be exercised during the operation, and if the erysipelas, or the aural complications possibly resulting therefrom, be properly treated so soon as they become manifest.*

Galvano-puncture.—When other methods fail to destroy mucous polypi, this one may be resorted to as being simple in application, and promising a successful result. To one connecting-wire a needle is attached which is inserted into the tumor, while the ordinary sponge electrode is applied in the vicinity of the polypus to be operated upon. One or more cells of a galvanic battery of moderate power are required to produce the needed amount of chemical reaction to destroy the tumor entirely. The operation for a single tumor of usual size should not last longer than five to ten minutes. Several tumors may be treated in this manner at the same sitting, as there is but little pain caused by the procedure, and no painful subsequent effects follow. The needle or needles, as one or more may be introduced into the polypus according to its size, are made preferably of gold or silver, as they do not oxidize. Still, steel needles may be used, and on account of their cheapness are sometimes employed. Several sittings are usually required for the complete removal by this method of a polypus of medium dimensions.

* Mackenzie "considers it by far the best method of treatment which exists," loc. cit., p. 263.

APPENDIX.

In an interesting paper read before the New York Academy of Medicine,* just as this work is going into the binders' hands,

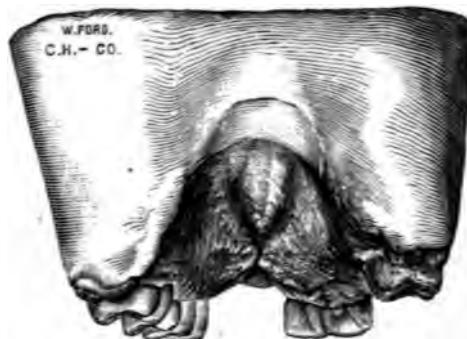


FIG. 148.—Abnormal Palatine Arch (Jarvis).

Dr. William C. Jarvis considered "the etiology and treatment of nasal catarrh, with special reference to the deviated septum."

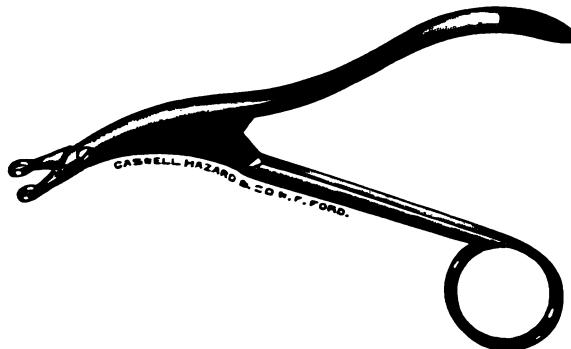


FIG. 149.—Jarvis' Fenestrated Forceps.

He directed attention to two important factors in the production of catarrhal processes, namely, *pressure irritation* and *defective*

* March 5, 1885. See New York Medical Record, March 14, 1885, p. 284.

nasal drainage. Dr. Jarvis, also, associated with deviation of the septum the existence of a high-pitched and narrow palatine arch (Fig. 148) due to heredity. Far from believing a dyscrasic condition present in the majority of cases, it is his conviction

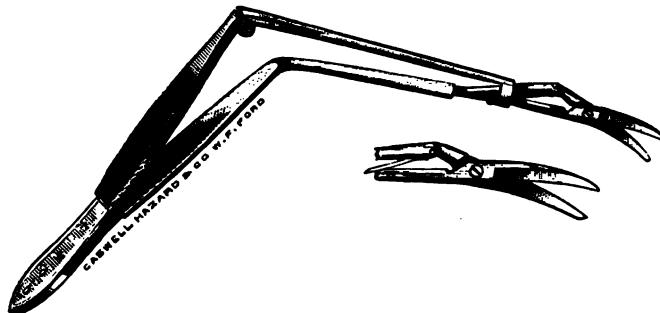


FIG. 150.—Jarvis' Trimming Scissors.

that *remarkable mental development* is usually connected with nasal catarrh. Traumatic deviation of the septum is less frequent than that of hereditary origin. Methods of treatment should correspond with the nature of the deviation, as whether



FIG. 151.—Jarvis' Rongeur Forceps.

it be osseous, cartilaginous, or merely hypertrophied mucous membrane.

For cartilaginous deviation he now employs No. 0 and 00 piano wire with his *écraseur*. Whenever it is desirable to economize time, he uses a fenestrated forceps, resembling somewhat, in shape and action, the ordinary ticket-punch (Fig. 149), and trimming scissors (Fig. 150).

Whenever the deviation is osseo-cartilaginous, he employs a rongeur forceps (Fig., 151), hollowed to cut like the teeth of a rodent, and with the proper nasal curve. Whenever he fears to perforate the septum, or to weaken the nasal supports, he uses Steele's stellate punch, in conjunction with an external nasal clamp (Fig. 152). Despite the use of cocaine in strong solution (ten per cent.), extreme pain will be inflicted in certain cases, especially where the deviation is deep-seated. A fine spray of rhigolene, under these conditions, abolishes all pain. Danger of explosion is removed by employing an electric light, isolated in a glass bulb.



FIG. 152.—External Na-sal Clamp (Jarvis).

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